XLINKS' MOROCCO-UK POWER PROJECT

Environmental Statement

Volume 2, Chapter 3: Hydrology and Flood Risk

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Glossary

Term	Meaning
Alverdiscott Substation	The existing National Grid Electricity Transmission substation at Alverdiscott, Devon, which comprises 400 kV and 132 kV electrical substation equipment.
Alverdiscott Substation Connection Development	The development required at the existing Alverdiscott Substation Site, which is envisaged to include development of a new 400 kV substation, and other extension modification works to be carried out by National Grid Electricity Transmission. This does not form part of the Proposed Development, however, it is considered cumulatively within the Environmental Impact Assessment as it is necessary to facilitate connection to the national grid.
Alverdiscott Substation Site	The National Grid Electricity Transmission site within which the Alverdiscott Substation sits.
Applicant	Xlinks 1 Limited.
Aquifer	A subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater.
Baseline	The status of the environment without the Proposed Development in place.
Climate change	A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
Converter Site	The Converter Site is proposed to be located to the immediate west of the existing Alverdiscott Substation Site in north Devon. The Converter Site would contain two converter stations (known as Bipole 1 and Bipole 2) and associated infrastructure, buildings and landscaping.
Construction Environmental Management Plan	A document detailing the overarching management principles for construction, which includes construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes.
Converter station	Part of an electrical transmission and distribution system. Converter stations convert electricity from Direct Current to Alternating Current, or vice versa.
Cumulative Effects	The combined effect of the Proposed Development in combination with the effects from other planning applications, on the same receptor or resource.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
Effect	The term used to express the consequence of an impact. The significance of effect is determined by correlating magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Exception Test	The Exceptions Test ensures that development is permitted in flood risk areas only in exceptional circumstances and when strict qualifying conditions have been met. It is carried out if the Sequential Test demonstrates that a development cannot be located in areas of low flood risk.
Flood Defences	A structure that is used to reduce the probability of floodwater affecting a particular area.

Term	Meaning
Flood Risk Assessment	A flood risk assessment is an assessment of the risk of flooding from all flood mechanisms, including the identification of flood mitigation measures, in order to satisfy the requirements of the National Planning Policy Framework and Planning Practice Guidance.
Flood Zone 1	Low Probability having less than 1 in 1,000 annual probability of river or sea flooding.
Flood Zone 2	Medium Probability Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Flood Zone 3a	High Probability Land having a 1 in 100 or greater annual probability of river flooding, or a 1 in 200 or greater annual probability of flooding from the sea in any year.
Flood Zone 3b	The Functional Floodplain. This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency.
Groundwater	All water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil.
Heavily Modified Water Body	A body of surface water which, as a result of physical alterations by human activity, is substantially changed in character, as designated in accordance with the provisions of Annex II of the Water Framework Directive (WFD).
HVAC Cables	The High Voltage Alternating Current cables which would bring electricity from the converter stations to the new Alverdiscott Substation Connection Development.
HVAC Cable Corridors	The proposed corridors (for each Bipole) within which the onshore High Voltage Alternating Current cables would be routed between the Converter Site and the Alverdiscott Substation Site.
HVDC Cables	The High Voltage Direct Current cables which would bring electricity to the UK converter stations from the Moroccan converter stations.
Hydrological catchment	Areas of land where rainfall runoff collects to a specific zone.
Hydrology	The study of the movement, distribution, and quality of water.
Impact	Change that is caused by an action/proposed development, e.g., land clearing (action) during construction which results in habitat loss (impact).
Inter-related effects	Multiple effects on the same receptor as a result of the Proposed Development. These occur when a series of the same effect acts on a receptor over time to produce a potential additive effect or where a number of separate effects, such as noise and habitat loss, affect a single receptor.
Internal Drainage Board	Internal Drainage Boards are an integral part of water level management in the UK. Each Drainage Board is a local public authority established in areas of special drainage need in England and Wales. They have permissive powers to manage water levels within their respective drainage districts. They undertake works to reduce flood risk to people and property and manage water levels to meet local needs.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
Landfall	The proposed area in which the offshore cables make landfall in the United Kingdom (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Cornborough Range, Devon, between Mean Low Water Springs and the transition joint bays inclusive of all construction works, including the offshore and onshore cable routes, and landfall compound(s).
Lead Local Flood Authority	Lead Local Flood Authorities have responsibility for developing a Local Flood Risk Management Strategy for their area covering local sources of flooding.

Term	Meaning
	The local strategy produced must be consistent with the national strategy. It will set out the local organisations with responsibility for flood risk in the area, partnership arrangements to ensure co-ordination between these organisations, an assessment of the flood risk, and plans and actions for managing the risk.
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils. The relevant Local Authorities for the Proposed Development are Devon County Council and Torridge District Council.
Main river	The term used to describe a watercourse designated as a main river under the Water Resources Act 1991 and shown on the Main River Map. These are usually larger rivers or streams and are managed by the Environment Agency.
Maximum design scenario	The realistic worst case scenario, selected on a topic-specific and impact specific basis, from a range of potential parameters for the Proposed Development.
Mean High Water Springs	The height of mean high water during spring tides in a year.
National Policy Statement(s)	The current national policy statements published by the Department for Energy Security and Net Zero in 2023 and adopted in 2024.
Onshore HVDC Cable Corridor	The proposed corridor within which the onshore High Voltage Direct Current cables would be located.
Onshore Infrastructure Area	The proposed infrastructure area within the Order Limits landward of Mean High Water Springs. The Onshore Infrastructure Area comprises the transition joint bays, onshore HVDC Cables, converter stations, HVAC Cables, highways improvements, utility diversions and associated temporary and permanent infrastructure including temporary compound areas and permanent accesses.
Order Limits	The area within which all offshore and onshore components of the Proposed Development are proposed to be located, including areas required on a temporary basis during construction (such as construction compounds).
Ordinary Watercourse	Watercourses (such as a river, stream, ditch, cut, sluice, dyke or non-public sewer) that are not designated a Main River under the Water Resources Act (1991). Responsibility for management lies with the Lead Local Flood Authority, or Internal Drainage Board or some watercourses where there is an Internal Drainage District.
Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.
Policy	A set of decisions by governments and other political actors to influence, change, or frame a problem or issue that has been recognized as in the political realm by policy makers and/or the wider public.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project, and which helps to inform consultation responses.
Principal Aquifer	A strategically important aquifer unit, which is designated by the Environment Agency.
Proposed Development	The element of Xlinks' Morocco-UK Power Project within the UK. The Proposed Development covers all works required to construct and operate the offshore cables (from the UK Exclusive Economic Zone to Landfall),

Term	Meaning
	Landfall, onshore Direct Current and Alternating Current cables, converter stations, and highways improvements.
River Basin District	Administrative area for coordinated water management, composed of multiple river basins (or catchments).
River Basin Management Plan	A collection of documents prepared by DEFRA which describe how waters are managed within each river basin district.
Runoff	Runoff occurs when there is more water than land can absorb. The excess liquid flows across the surface of the land.
Secondary Aquifer	A locally important aquifer unit.
Sequential Test	A Sequential Test aims to steer new development to areas with the lowest probability of flooding by recommending that development is not allocated if there are reasonably available Sites appropriate to the proposed development in areas with a lower probability of flooding.
Site of Special Scientific Interest	A site designation specified and protected in the Wildlife and Countryside Act 1981. These sites are of particular scientific interest due to important biological (e.g. a rare species of fauna or flora), geological or physiological features.
Study area	This is an area which is defined for each environmental topic which includes the Order Limits as well as potential spatial and temporal considerations of the impacts on relevant receptors. The study area for each topic is intended to cover the area within which an impact can be reasonably expected.
Sustainable Drainage Systems	A collection of water management practices that aim to manage stormwater locally as close its source as possible, to mimic natural drainage and encourage its infiltration, attenuation and passive treatment.
Tidal (Coastal) flooding	Tidal flooding is caused by extreme tidal conditions including high tides and storm surges, overtopping local flood defences or coastal features.
Transboundary effects	Effects from a project within one state that affect the environment of another state(s).
Water Framework Directive	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. The Water Framework Directive promotes water management through river basin planning. It covers inland surface waters, estuarine waters, coastal waters and groundwater.
Water Quality	The physical, chemical and biological characteristics of water.
Xlinks' Morocco UK Power Project	The overall scheme from Morocco to the national grid, including all onshore and offshore elements of the transmission network and the generation site in Morocco (referred to as the 'Project').

Acronyms

Acronym	Meaning
BGS	British Geological Survey
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
Defra	Department for Environment, Food & Rural Affairs
DESNZ	The Department for Energy Security and Net Zero
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency

Acronym	Meaning
EIA	Environmental Impact Assessment
EWG	Expert Working Group
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment
HDD	Horizontal Directional Drilling
LLFA	Lead Local Flood Authority
MAGIC	Multi-Agency Geographic Information for the Countryside
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
NGET	National Grid Electricity Transmission
NVZs	Nitrate Vulnerable Zones
NPPF	National Planning Policy Framework
NPS	National Policy Statement
On-CEMP	Onshore Construction Environmental Management Plan
OS	Ordnance Survey
PWS	Private Water Supplies
SMP	Shoreline Management Plans
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TraC	Transitional and Coastal
UK	United Kingdom
WFD	Water Framework Directive

Units

Units	Meaning
ha	Hectare
km	Kilometre
m	Metre
m^2	Square metre
m^3	Cubic metre
mAOD	Metres Above Ordnance Datum
nm	Nautical mile

3 HYDROLOGY AND FLOOD RISK

3.1 Introduction

3.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) undertaken for the United Kingdom (UK) elements of Xlinks' Morocco-UK Power Project (the 'Project'). For ease of reference, the UK elements of the Project are referred to in this chapter as the 'Proposed Development'. The ES accompanies the application to the Planning Inspectorate for development consent for the Proposed Development.

3.1.2 This chapter considers the likely impacts and effects of the Proposed Development on hydrology and flood risk during the construction, operation and maintenance and decommissioning phases. Specifically, it relates to the onshore elements of the Proposed Development landward of Mean Low Water Springs.

3.1.3 In particular, this ES chapter:

- identifies the key legislation, policy and guidance relevant to hydrology and flood risk;
- details the EIA scoping and consultation process undertaken to date for hydrology and flood risk;
- confirms the study area for the assessment, the methodology used to identify baseline environmental conditions, the impact assessment methodology, and identifies any assumptions and limitations encountered in compiling the environmental information;
- sets out the existing and future environmental baseline conditions, established from desk studies, surveys and consultation;
- details the mitigation and/or monitoring measures that are proposed to prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process;
- defines the project design parameters used to inform for the impact assessment;
- presents an assessment of the likely impacts and effects in relation to the construction, operation and maintenance and decommissioning phases of the Proposed Development on hydrology and flood risk; and
- identifies any cumulative, transboundary and/or inter-related effects in relation to the construction, operation and maintenance and decommissioning phases of the Proposed Development on hydrology and flood risk.

3.1.1 The assessment presented is informed by the following technical chapters and should be read in conjunction with the following technical chapters of the ES:

- Volume 2, Chapter 1: Onshore Ecology and Nature Conservation;
- Volume 2, Chapter 4: Geology, Hydrogeology and Ground Conditions; and
- Volume 4, Chapter 1: Climate Change.

3.1.2 This chapter also draws upon additional information to support the assessment contained within:

- Volume 2, Appendix 3.1: Flood Risk Assessment (FRA);
- Volume 2, Appendix 3.2: Onshore Water Framework Directive (WFD) Assessment; and
- Volume 2, Appendix 3.3: Surface Water Abstraction Licences, Discharge Consents and Pollution Incidents of the ES.

3.2 Legislative and Policy Context

Legislation

Retained European Legislation

3.2.1 The Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000) is a European Union Directive which committed member states to achieve good qualitative and quantitative status of all water bodies by 2015. Under the Directive, water bodies are defined as all ground and surface waters, including rivers, lakes, transitional waters, and coastal waters (up to one nautical mile (nm) from shore).

3.2.2 The regulations require the impacts of a project on biology, chemistry and hydromorphology to be considered in relation to WFD status classes, and are reported under a specific WFD section in any ES or in a separate WFD compliance report (Environment Agency, 2010).

3.2.3 The WFD requires the prevention of deterioration and the protection enhancement, and restoration of all bodies of water. This means that new development should not adversely impact upon on the ability of a water body to achieve its environmental objectives.

3.2.4 The WFD is transposed into law in England and Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the 2017 Regulations). Under Section 2 of the European Union (Withdrawal) Act 2018, the 2017 Regulations continue to have effect in domestic law following the UK's withdrawal from the European Union.

3.2.5 The European Floods Directive 2007 (2007/60/EC) relates to statutory body engagement with the preparation of flood risk assessments, flood maps and management plans.

3.2.6 The Drinking Water Directive 2015 (2015/1787) relates to the quality of water intended for human consumption. Its objective is to protect human health from adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.

National Legislation

3.2.7 The Water Resources Act 1991 principally relates to the protection of controlled waters (i.e., rivers, lakes, canals, and groundwater) from pollution. It sets out the responsibilities of the Environmental Agency (EA) in relation to water pollution, resource management, flood defence, fisheries, and in some areas, navigation. It

also regulates discharges to controlled waters, namely rivers, estuaries, coastal waters, lakes, and groundwater.

3.2.8 The Land Drainage Act 1991 sets out the responsibilities of the EA, internal drainage boards, local authorities, navigation authorities and riparian owners in the mitigation of flooding.

3.2.9 The Environmental Protection Act 1990 makes provision for improved management of waste and pollution and establishes legal responsibilities for pollution control for land, air, and water.

3.2.10 The Environment Act 2021 is part of the new legal framework for environmental protection post Brexit. The Act brings in measures for improvement of the environment, including waste, resource efficiency, air quality, water, nature and biodiversity, and conservation.

3.2.11 The Water Act 2003 amends the Water Resources Act 1991 to improve the management of long-term water resources mainly through significant changes to how abstraction and impoundment of water is regulated. The Water Act 2003 aims for the sustainable use of water resources, strengthening the voice of consumers, a measured increase in competition, and the promotion of water conservation.

3.2.12 The Flood Risk Regulations 2009 transpose Directive 2007/60/EC on the assessment and management of flood risk for England and Wales. The regulations impose duties on the Environment Agency (EA) and local authorities to prepare preliminary assessment reports about past floods in each river basin district, and the possible harmful consequences of future floods. The EA is also under a duty to prepare a preliminary assessment map of each river basin district. Following these assessments, the authorities must identify areas which are at significant risk of flooding.

3.2.13 The Flood and Water Management Act 2010 aims to improve flood risk management. It designates Lead Local Flood Authorities (LLFAs), whose responsibilities include reviewing all proposed sustainable drainage systems for new applications.

3.2.14 The Water Act 2014 amends the Water Industry Act 1991 and improves regulation of the water industry through licensing, as well as increasing competition within the water and sewerage industries for the benefit of customers. It also details that the long-term resilience of water supply and sewerage systems should be secured. A single environmental permitting regime for the regulation of the water environment is set out, in addition to the mechanisms through which households can obtain flood insurance.

3.2.15 The Environmental Permitting (England and Wales) Regulations 2016 set out an environmental permitting and compliance regime that applies to various activities such as discharges to controlled waters.

3.2.16 The Reservoirs Act 1975 makes provision against the escape of water from large reservoirs or from lakes or lochs artificially created or enlarged.

Planning Policy Context

3.2.17 The Proposed Development would be located within the UK Exclusive Economic Zone offshore waters (beyond 12 nm from the English coast) and inshore waters, with the onshore infrastructure proposed to be located wholly within Devon, England. As set out in Volume 1, Chapter 1: Introduction, of the ES, the Secretary of State for the Department for Energy Security and Net Zero (DESNZ) has directed that elements of the Proposed Development are to be treated as development for which development consent is required under the Planning Act 2008, as amended.

National Policy Statements

3.2.18 There are currently six energy National Policy Statements (NPSs), three of which contain policy relevant to the Proposed Development, specifically:

- Overarching NPS for Energy (NPS EN-1) which sets out the UK Government's policy for the delivery of major energy infrastructure (Department for Energy Security & Net Zero 2023a);
- NPS for Renewable Energy Infrastructure (NPS EN-3) (Department for Energy Security & Net Zero 2023b); and
- NPS for Electricity Networks Infrastructure (NPS EN-5) (Department for Energy Security & Net Zero 2023c).

3.2.19 **Table 3.1** sets out key aspects from the NPSs relevant to the Proposed Development, with particular reference to the need for and approach to consenting such infrastructure.

Table 3.1: Summary of relevant NPS policy

Summary of NPS requirement	How and where considered in the ES
NPS EN-1	
Climate change is already having an impact and is expected to have an increasing impact on the UK throughout this century. The UK Climate Projections 2018 show an increased chance of milder, wetter winters and hotter, drier summers in the UK, with more intensive rainfall causing flooding. Sea levels will continue to rise beyond the end of the century, increasing risks to vulnerable coastal communities. Within the lifetime of energy projects, these factors will lead to increased flood risks in areas susceptible to flooding, and to an increased risk of the occurrence of floods in some areas which are not currently thought of as being at risk. A robust approach to flood risk management is a vital element of climate change adaptation; the applicant and the Secretary of State should take account of the policy on climate change adaptation in Section 4.10. [Paragraph 5.8.5 NPS EN-1].	Climate change is considered in Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. An assessment of an increase of peak river flow, peak rainfall intensities and sea level rise driven by climate change has been made within the Flood Risk Assessment (FRA) to the end of the construction phase for the Landfall, Onshore High Voltage Direct Current (HVDC) Cable Corridor and High Voltage Alternating Current (HVAC) Cables and the operation and maintenance phase for the Converter Site. Climate change, including peak river flow and sea level rise, have been taken into account in the characterisation of the baseline and future baseline environment of this chapter (see **section 3.7**). Peak rainfall intensity is taken into account within the assessment of flood risk in addition to the Converter Site Drainage Strategy which incorporates a 50% climate change uplift based on the Upper End allowance for the 2070's epoch. The Outline Operational Drainage Strategy has been submitted with the DCO application (document reference 7.22).

Summary of NPS requirement	How and where considered in the ES
If, following application of the Sequential Test, it is not possible, (taking into account wider sustainable development objectives), for the project to be located in areas of lower flood risk the Exception Test can be applied. The test provides a method of allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available. The Exception Test is only appropriate for use where the Sequential Test alone cannot deliver an acceptable site. It would only be appropriate to move onto the Exception Test when the Sequential Test has identified reasonably available, lower risk sites appropriate for the proposed development where, accounting for wider sustainable development objectives, application of relevant policies would provide a clear reason for refusing development in any alternative locations identified. Examples could include alternative site(s) that are subject to national designations such as landscape, heritage and nature conservation designations, for example Areas of Outstanding Natural Beauty (AONBs), Site of Special Scientific Interest (SSSIs) and World Heritage Sites (WHS) which would not usually be considered appropriate. Both elements of the Exception Test will have to be satisfied for development to be consented. To pass the Exception Test it should be demonstrated that: • the project would provide wider sustainability benefits to the community that outweigh flood risk; and • the project will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible will reduce flood risk overall. [paragraphs 5.8.9 – 5.8.11 of NPS EN-1].	The Proposed Development is classified as 'essential infrastructure'. This definition, alongside the definitions for the sequential test and exception test are provided within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. The site selection process is detailed within Volume 1, Chapter 4: Needs and Alternatives of the ES. Development has been steered towards areas of lowest flood risk, including Flood Zone 1, with the Converter Site assessed to have a low risk of flooding. The Proposed Development is partially located within Flood Zone 3 and have been subjected to and deemed to have passed the sequential test as presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. The exception test for the Onshore Infrastructure Area of the Proposed Development is presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. The exception test demonstrates the Proposed Development will provide wider sustainability benefits that outweigh flood risk and the development will be safe for the development lifetime, taking into consideration the vulnerability of its users.
Development should be designed to ensure there is no increase in flood risk elsewhere, accounting for the predicted impacts of climate change throughout the lifetime of the development. There should be no net loss of floodplain storage and any deflection or constriction of flood flow routes should be safely managed within the site. Mitigation measures should make as much use as possible of natural flood management techniques. [paragraph 5.8.12 of NPS EN-1].	An assessment of an increase of peak river flow, peak rainfall intensities and sea level rise driven by climate change has been made within the FRA to the end of the construction phase for the Landfall, Onshore HVDC Cable Corridor and HVAC Cables and the operation and maintenance phase for the Converter Site. Peak river flow and sea level rise are accounted for within fluvial flood risk sections. Peak rainfall intensity is taken into account within surface water flooding sections as well as the operational drainage strategies for the Converter Site. Aside from highways improvements, all temporary and permanent elements of the proposed development are located within Flood Zone 1 aside from cables which pass underneath extents of Flood Zones 3 via trenchless techniques (i.e. Horizontal Directional Drilling (HDD)). HDD compounds which include the entry and exit pits are all located within Flood Zone 1.

Summary of NPS requirement	How and where considered in the ES
	In regards to highways improvements located within Flood Zone 3, these elements of development relate to junction upgrades and road widening and are expected to tie into existing ground levels. As such, no floodplain displacement will occur and no floodplain compensation will be required. Commitments have been proposed to reduce flood risk and vulnerability to flooding during the construction, operation and maintenance and decommissioning periods. Commitments are presented within **Table 3.25.**
A site-specific flood risk assessment should be provided for all energy projects in Flood Zones 2 and 3 in England. In Flood Zone 1, an assessment should accompany all proposals involving: • sites of 1 hectare or more; • land which has been identified by the Environment Agency as having critical drainage problems; • land identified (for example in a local authority strategic flood risk assessment) as being at increased flood risk in future; • land that may be subject to other sources of flooding (for example surface water); or • where the EA, LLFA, Internal Drainage Board or other body have indicated that there may be drainage problems. This assessment should identify and assess the risks of all forms of flooding to and from the project and demonstrate how these flood risks will be managed, taking climate change into account. The minimum requirements for Flood Risk Assessments (FRA) are that they should: • be proportionate to the risk and appropriate to the scale, nature and location of the project; • consider the risk of flooding arising from the project in addition to the risk of flooding to the project; • take the impacts of climate change into account, across a range of climate scenarios, clearly stating the development lifetime over which the assessment has been made; • be undertaken by competent people, as early as possible in the process of preparing the proposal; • consider both the potential adverse and beneficial effects of flood risk management infrastructure, including raised defences, flow channels, flood storage areas and other artificial features, together with the consequences of their failure and exceedance; • consider the vulnerability of those using the site, including arrangements for safe access and escape;	Due to the scale of the Proposed Development, an FRA has been undertaken to assess flood risk from fluvial, tidal, surface water (pluvial), groundwater, sewers, reservoirs and artificial sources to the Landfall, Onshore HVDC Cable Corridor, HVAC Cables and Converter Stations. The FRA is presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. Due to negligible above ground development associated with the operation and maintenance phase of the Landfall, HVDC Cable Corridor and HVAC Cables, the FRA focuses on construction phase impacts. The FRA for the Converter Site also assesses flood risk to the development throughout its operation and maintenance phase. An assessment of an increase of peak river flow, peak rainfall intensities and sea level rise driven by climate change has been made within the FRA to the end of the construction phase for the Landfall, Onshore HVDC Cable Corridor and HVAC Cables and the operation and maintenance phase for the Converter Site. Peak river flow and sea level rise are accounted for within fluvial flood risk sections. Peak rainfall intensity is taken into account within surface water flooding sections as well as the operational drainage strategies for the Converter Site. In regard to an assessment of residual flood risk, whilst flood defences are present within the study area and provide a degree of protection against flooding, the undefended scenario has been used to assess residual fluvial and tidal flood risk throughout the development lifetime, taking into account the effects of climate change. Historical flood events recorded by the Environment Agency and Strategic Flood Risk Assessment reports are also noted. Commitments have been proposed to reduce flood risk and vulnerability to flooding during the construction, operation and maintenance and decommissioning periods. Commitments are presented within **Table 3.25.** For aspects of the Proposed Development which are located Flood Zone 2 and 3 during construction, the measures included in **section 3.8** will be implemented to reduce vulnerability of site users.

Summary of NPS requirement	How and where considered in the ES
• consider and quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and include information on flood likelihood, speed-of-onset, depth, velocity, hazard and duration; • identify and secure opportunities to reduce the causes and impacts of flooding overall, making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management; • consider the effects of a range of flooding events including extreme events on people, property, the natural and historic environment and river and coastal processes; • include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that these risks can be safely managed, ensuring people will not be exposed to hazardous flooding; • consider how the ability of water to soak into the ground may change with development, along with how the proposed layout of the project may affect drainage systems. Information should: i. Describe the existing surface water drainage arrangements for the site ii. Set out (approximately) the existing rates and volumes of surface water run-off generated by the site. Detail the proposals for restricting discharge rates iii. Set out proposals for managing and discharging surface water from the site using sustainable drainage systems and accounting for the predicted impacts of climate change. If sustainable drainage systems have been rejected, present clear evidence of why their inclusion would be inappropriate iv. Demonstrate how the hierarchy of drainage options has been followed. v. Explain and justify why the types of SuDS and method of discharge have been selected and why they are considered appropriate. vi. Explain how sustainable drainage systems have been integrated with other aspects of the development such as open space or green infrastructure, so as to ensure an efficient use of the site vii. Describe the multifunctional benefits the sustainable drainage system will provide viii. Set out which opportunities to reduce the causes and impacts of flooding have been identified and included as part of the proposed sustainable drainage system	Minimal above ground development (in the form of inspection covers) will occur as a result of the installation of the Landfall, Onshore HVDC Cable Corridor and HVAC Cables. As a result, no floodplain compensation is required in relation to these elements of the Proposed Development. The Outline Operational Drainage Strategy has been submitted with the DCO application (document reference 7.22). The existing site is currently fully greenfield. Surface water runoff arising from proposed impermeable areas are to drain to attenuation basin Sustainable Drainage Systems (SuDS) features prior to discharging to a watercourse within the order limits at the QBAR greenfield runoff rate. Additional SuDS features that could be implemented as part of the drainage strategy for the Converter Site are to be assessed at the detailed design stage. Due to underlying ground conditions, infiltration techniques are not expected to be feasible, subject to confirmation via further Ground Investigation at the detailed design stage. Surface water attenuation requirements include a 50% climate change allowance uplift. Pollution mitigation is to be provided via oil interceptors and attenuation basin SuDS features. Any exceedance flows are to be stored on site to prevent an increase in flood risk downstream. Appropriate management and maintenance to the drainage network is to be undertaken throughout the operation and maintenance phase of the development by a specialist management company, with details to be confirmed during the detailed design stage. With the implementation of the above, it is demonstrated that flood risk will not be increased elsewhere, accounts for the predicted impacts of climate change and ensures no reduction in floodplain capacity.

Summary of NPS requirement	How and where considered in the ES
ix. Explain how run-off from the completed development will be prevented from causing an impact elsewhere x. Explain how the sustainable drainage system been designed to facilitate maintenance and, where relevant, adoption. Set out plans for ensuring an acceptable standard of operation and maintenance throughout the lifetime of the development. • detail those measures that will be included to ensure the development will be safe and remain operational during a flooding event throughout the development's lifetime without increasing flood risk elsewhere; • identify and secure opportunities to reduce the causes and impacts of flooding overall during the period of construction; and • be supported by appropriate data and information, including historical information on previous events. Further guidance can be found in the Planning Practice Guidance Flood Risk and Coastal Change section which accompanies the National Planning Policy Framework (NPPF) or successor documents. [Paragraphs 5.8.13 – 5.8.16 of NPS EN-1].	
Development (including construction works) will need to account for any existing watercourses and flood and coastal erosion risk management structures or features, or any land likely to be needed for future structures or features so as to ensure: • Access, clearances and sufficient land are retained to enable their maintenance, repair; operation, and replacement, as necessary • Their standard of protection is not reduced; and • Their condition or structural integrity is not reduced. [paragraph 5.8.17 of NPS EN-1]	HDD (or other trenchless techniques) entry and exit points will be located at least 16 m away from the River Torridge and associated landward toe of flood defences and at least 10 m from ordinary watercourses, as presented within **Table 3.25**. This commitment ensures watercourse easements are not reduced and the condition of flood defences will not be adversely impacted by construction activities.
Applicants for projects which may be affected by, or may add to, flood risk should arrange pre-application discussions before the official pre-application stage of the NSIP process with the Environment Agency (EA) and, where relevant, other bodies such as Lead Local Flood Authorities (LLFA), Internal Drainage Boards, sewerage undertakers, navigation authorities, highways authorities and reservoir owner and operators. Such discussions should identify the likelihood and possible extent and nature of the flood risk, help scope the FRA, and identify the information that will be required by the Secretary of State to reach a decision on the application when it is submitted. The Secretary of State should advise applicants to	A meeting was held with the LLFA and EA in April 2024 to discuss the scope of the Proposed Development, the nature of flood risk within the study area and impacts relating to hydrology and flood risk scoped into the Environmental Impact Assessment. Two technical notes were prepared for the EA in regards to the method for assessing flood risk based on available data, as well as climate change allowances to be used within the Flood Risk Assessment and Conceptual Drainage Strategy. Feedback from the consultation meeting and technical note was taken forward within the Flood Risk Assessment presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and

Summary of NPS requirement	How and where considered in the ES
undertake these steps where they appear necessary but have not yet been addressed. If the Environment Agency or another flood risk management authority has reasonable concerns about the proposal on flood risk grounds, the applicant should discuss these concerns with the Environment Agency and take all reasonable steps to agree ways in which the proposal might be amended, or additional information provided, which would satisfy the authority's concerns. [paragraphs 5.8.18 – 5.8.20 of NPS EN-1]	the impact assessment presented within this chapter.
The Sequential Test ensures that a sequential, risk-based approach is followed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account. Where it is not possible to locate development in low-risk areas, the Sequential Test should go on to compare reasonably available sites with medium risk areas and then, only where there are no reasonably available sites in low and medium risk areas, within high-risk areas. The technology specific NPSs set out some exceptions to the application of the Sequential Test. However, when seeking development consent on a site allocated in a development plan through the application of the Sequential Test, informed by a strategic flood risk assessment, applicants need not apply the Sequential Test, provided the proposed development is consistent with the use for which the site was allocated and there is no new flood risk information that would have affected the outcome of the test. [paragraphs 5.8.21 – 5.8.22 of NPS EN-1].	The Proposed Development is classified as 'essential infrastructure'. This definition, alongside the definitions for the sequential test and exception test are provided within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. The site selection process is detailed within Volume 1, Chapter 4: Needs and Alternatives of the ES. Development has been steered towards areas of lowest flood risk, including Flood Zone 1, with the Converter Site assessed to have a low risk of flooding. The Proposed Development is partially located within Flood Zone 3 and have been subjected to and deemed to have passed the sequential test as presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.
To satisfactorily manage flood risk, arrangements are required to manage surface water and the impact of the natural water cycle on people and property. In this NPS, the term SuDS refers to the whole range of sustainable approaches to surface water drainage management including, where appropriate: • source control measures including rainwater recycling and drainage; • infiltration devices to allow water to soak into the ground, that can include individual soakaways and communal facilities; • filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns; • filter drains and porous pavements to allow rainwater and run-off to infiltrate into permeable material below ground and provide storage if needed; • basins, ponds and tanks to hold excess water after rain and allow controlled discharge that avoids flooding; and	The Outline Operational Drainage Strategy has been submitted with the DCO application (document reference 7.22). The existing site is currently fully greenfield. Surface water runoff arising from proposed impermeable areas are to drain to attenuation basin SuDS features prior to discharging to a watercourse within the order limits at the QBAR greenfield runoff rate. Additional SuDS features that could be implemented as part of the drainage strategy for the Converter Site are to be assessed at the detailed design stage. Due to underlying ground conditions, infiltration techniques are not expected to be feasible, subject to confirmation via further Ground Investigation at the detailed design stage. Surface water attenuation requirements include a 50% climate change allowance uplift. Pollution mitigation is to be provided via oil interceptors and attenuation basin SuDS features. Any exceedance flows are to be stored on site to prevent an increase in flood risk downstream. Appropriate management and maintenance to the drainage network is to be undertaken throughout the operational phase of the development by a specialist management company,

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• flood routes to carry and direct excess water through developments to minimise the impact of severe rainfall flooding. Site layout and surface water drainage systems should cope with events that exceed the design capacity of the system, so that excess water can be safely stored on or conveyed from the site without adverse impacts. The surface water drainage arrangements for any project should, accounting for the predicted impacts of climate change throughout the development's lifetime, be such that the volumes and peak flow rates of surface water leaving the site are no greater than the rates prior to the proposed project, unless specific off-site arrangements are made and result in the same net effect. It may be necessary to provide surface water storage and infiltration to limit and reduce both the peak rate of discharge from the site and the total volume discharged from the site. There may be circumstances where it is appropriate for infiltration facilities or attenuation storage to be provided outside the project site, if necessary, through the use of a planning obligation. [paragraphs 5.8.24 – 5.8.28 of NPS EN-1].	with details to be confirmed during the detailed design stage. With the implementation of the above, it is demonstrated flood risk will not be increased elsewhere, accounts for the predicted impacts of climate change and ensures no reduction in floodplain capacity.
The sequential approach should be applied to the layout and design of the project. Vulnerable aspects of the development should be located on parts of the site at lower risk and residual risk of flooding. Applicants should seek opportunities to use open space for multiple purposes such as amenity, wildlife habitat and flood storage uses. Opportunities should be taken to lower flood risk by reducing the built footprint of previously developed sites and using SuDS. Where a development may result in an increase in flood risk elsewhere through the loss of flood storage, on-site level-for-level compensatory storage, accounting for the predicted impacts of climate change over the lifetime of the development, should be provided. Where it is not possible to provide compensatory storage on site, it may be acceptable to provide it off-site if it is hydraulically and hydrologically linked. Where development may cause the deflection or constriction of flood flow routes, these will need to be safely managed within the site. Where development may contribute to a cumulative increase in flood risk elsewhere, the provision of multifunctional sustainable drainage systems, natural flood management and green infrastructure can also make a valuable contribution to mitigating this risk whilst providing wider benefits. The receipt of and response to warnings of floods is an essential element in the management of the residual risk of flooding. Flood Warning and evacuation plans should be in place for those areas	The Proposed Development is classified as 'essential infrastructure'. This definition, alongside the definitions for the sequential test and exception test are provided within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. The site selection process is detailed within Volume 1, Chapter 4: Needs and Alternatives of the ES. Development has been steered towards areas of lowest flood risk, including Flood Zone 1, with the Converter Site assessed to have a low risk of flooding. The Proposed Development is partially located within Flood Zone 3 and have been subjected to and deemed to have passed the sequential test as presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. Aside from highways improvements, all temporary and permanent elements of the Proposed Development are located within Flood Zone 1 aside from cables which pass underneath extents of Flood Zones 3 via trenchless techniques (i.e. HDD). HDD compounds which include the entry and exit pits are all located within Flood Zone 1. In regards to highways improvements located within Flood Zone 3, these elements of development relate to junction upgrades and road widening and are expected to tie into existing ground levels. As such, no floodplain displacement will occur and no floodplain compensation will be required. Commitments have been proposed to reduce flood risk and vulnerability to flooding during the construction, operation and maintenance and

Summary of NPS requirement	How and where considered in the ES
at an identified risk of flooding. [paragraphs 5.8.29 – 5.8.33 of NPS EN-1].	decommissioning periods. Commitments are presented within **Table 3.25.**
The applicant should take advice from the local authority emergency planning team, emergency services and, where appropriate, from the local resilience forum when producing an evacuation plan for a manned energy project as part of the FRA. Any emergency planning documents, flood warning and evacuation procedures that are required should be identified in the FRA. [paragraph 5.8.34 if NPS EN-1]	A Flood Management Plan will form part of the final On-CEMP(s) and will be prepared for works taking place within a Flood Warning/Flood Alert area. During the construction phase, the Principal Contractor(s) will sign up to the Flood Warning Service and will be alerted by a phone call or text when a Flood Warning becomes active to enable site personnel to be evacuated from the site in a timely manner prior to a flood event occurring. Commitments are presented within **Table 3.25.**
Flood resistant and resilient materials and design should be adopted to minimise damage and speed recovery in the event of a flood. [paragraph 5.8.35 if NPS EN-1]	In regards to highways improvements located within Flood Zone 3, these elements of the Proposed Development relate to junction upgrades and road widening and are expected to tie into existing ground levels. Roads comprise flood resistant and resilient materials within its construction and will require minimal maintenance after a flood event.
In determining an application for development consent, the Secretary of State should be satisfied that where relevant: • the application is supported by an appropriate FRA; • the Sequential Test has been applied and satisfied as part of site selection; • a sequential approach has been applied at the site level to minimise risk by directing the most vulnerable uses to areas of lowest flood risk; • the proposal is in line with any relevant national and local flood risk management strategy; • SuDS (as required in the next paragraph on National Standards) have been used unless there is clear evidence that their use would be inappropriate; • in flood risk areas the project is designed and constructed to remain safe and operational during its lifetime, without increasing flood risk elsewhere (subject to the exceptions set out in paragraph 5.8.42); • the project includes safe access and escape routes where required, as part of an agreed emergency plan, and that any residual risk can be safely managed over the lifetime of the development; and • land that is likely to be needed for present or future flood risk management infrastructure has been appropriately safeguarded from development to the extent that development would not prevent or hinder its construction, operation or maintenance. [paragraph 5.8.36 if NPS EN-1]	Due to the scale of the Proposed Development, an FRA has been undertaken to assess flood risk from fluvial, tidal, surface water (pluvial), groundwater, sewers, reservoirs and artificial sources to the Landfall, Onshore HVDC Cable Corridor, HVAC Cables and Converter Stations. The FRA is presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. Due to negligible above ground development associated with the operation and maintenance phase of the Landfall, Onshore HVDC Cable Corridor and HVAC Cables, the FRA focuses on construction phase impacts. The FRA for the Converter Site also assesses flood risk to the development throughout its operation and maintenance phase. An assessment of an increase of peak river flow, peak rainfall intensities and sea level rise driven by climate change has been made within the FRA to the end of the construction phase for the Landfall, Onshore HVDC Cable Corridor and HVAC Cables and the operation and maintenance phase for the Converter Site. Peak river flow and sea level rise are accounted for within fluvial flood risk sections. Peak rainfall intensity is taken into account within surface water flooding sections as well as the operational drainage strategies for the Converter Site. In regard to an assessment of residual flood risk, whilst flood defences are present within the study area and provide a degree of protection against flooding, the undefended scenario has been used to assess residual fluvial and tidal flood risk throughout the development lifetime, taking into account the effects of climate change. The site selection process is detailed within Volume 1, Chapter 4: Needs and Alternatives of the ES. Development has been steered towards areas of lowest flood risk, including Flood Zone 1, with the Converter Site assessed to have a low risk of

Summary of NPS requirement	How and where considered in the ES
	flooding. The Proposed Development is partially located within Flood Zone 3 and have been subjected to and deemed to have passed the sequential test as presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.
For energy projects which have drainage implications, approval for the project's drainage system, including during the construction period, will form part of the development consent issued by the Secretary of State. The Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any National Standards published by Ministers under paragraph 5(1) of Schedule 3 to the Flood and Water Management Act 2010. In addition, the Development Consent Order (DCO), or any associated planning obligations, will need to make provision for appropriate operation and maintenance of any SuDS throughout the project's lifetime. Where this is secured through the adoption of any SuDS features, any necessary access rights to property will need to be granted. Where relevant, the Secretary of State should be satisfied that the most appropriate body is being given the responsibility for maintaining any SuDS, taking into account the nature and security of the infrastructure on the proposed site. Responsible bodies could include, for example the landowner, the relevant lead local flood authority (LLFA) or water and sewerage company (through the Ofwat approved Sewerage Sector Guidance), or another body, such as an Internal Drainage Board. [Paragraphs 5.8.37 – 5.8.39 of NPS EN-1].	An Outline Pollution Prevention Plan forms Appendix A to the Outline Onshore Construction Environmental Management Plan (On-CEMP) (document reference 7.7), submitted as part of the application for development consent. Furthermore, pollution prevention measures will be incorporated into the operational drainage strategy. Mitigation measures to be adopted as part of the Proposed Development is presented within **Table 3.25**. The Outline Operational Drainage Strategy has been submitted with the DCO application (document reference 7.22). Appropriate management and maintenance to the drainage network is to be undertaken throughout the operation and maintenance phase of the Proposed Development by a specialist management company, with details to be confirmed during the detailed design stage.
If the Environment Agency or another flood risk management authority continues to have concerns and objects to the grant of development consent on the grounds of flood risk, the Secretary of State can grant consent, but would need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the authority to try to resolve the concerns. [paragraph 5.8.40 if NPS EN-1]	A meeting was held with the LLFA and EA in April 2024 to discuss the scope of the Proposed Development, the nature of flood risk within the study area and impacts relating to hydrology and flood risk scoped into the Environmental Impact Assessment. Two technical notes were prepared for the EA in regards to the method for assessing flood risk based on available data, as well as climate change allowances to be used within the Flood Risk Assessment and Conceptual Drainage Strategy. Feedback from the consultation meeting and technical note was taken forward within the Flood Risk Assessment presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and the impact assessment presented within this chapter.
Energy projects should not normally be consented within Flood Zone 3b, or on land expected to fall within these zones within its predicted lifetime. This may also apply where land is subject to other sources of flooding (for example surface water). However, where essential energy infrastructure has to be located in such areas, for operational reasons,	As assessed within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES, extents of Flood Zone 3 at the Landfall are considered to be tidal in nature. Extents of Flood Zone 3 across the remainder of the study area are associated with fluvial flows from small ordinary watercourses.

Summary of NPS requirement	How and where considered in the ES
they should only be consented if the development will not result in a net loss of floodplain storage and will not impede water flows. *Exceptionally, where an increase in flood risk elsewhere cannot be avoided or wholly mitigated, the Secretary of State may grant consent if they are satisfied that the increase in present and future flood risk can be mitigated to an acceptable and safe level and taking account of the benefits of, including the need for, nationally significant energy infrastructure as set out in Part 3 above. In any such case the Secretary of State should make clear how, in reaching their decision, they have weighed up the increased flood risk against the benefits of the project, taking account of the nature and degree of the risk, the future impacts on climate change, and advice provided by the Environment Agency and other relevant bodies.* *[paragraph 5.8.41 – 5.8.42 of NPS EN-1]*	Due to data availability, the extent of Flood Zone 3b is informed by the extent of Flood Zone 3. Permanent development includes the Converter Stations and their associated access and egress Proposed permanent development is located within Flood Zone 1. Due to its vulnerability classification and location within Flood Zone 1, 2, 3a and 3b, the Landfall and Onshore HVDC Cable Corridor has been subject to and have deemed to have passed the sequential test and exception test (see Volume 2, Appendix 3.1: Flood Risk Assessment of the ES). Aside from highways improvements, all temporary and permanent elements of the proposed development are located within Flood Zone 1 aside from cables which pass underneath extents of Flood Zones 3 via HDD. HDD compounds which include the entry and exit pits are all located within Flood Zone 1. In regards to highways improvements located within Flood Zone 3, these elements of development relate to junction upgrades and road widening and are expected to tie into existing ground levels. As such, no floodplain displacement will occur and no floodplain compensation will be required.
Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment, and how this might change due to the impact of climate change on rainfall patterns and consequently water availability across the water environment, as part of the Environmental Statement or equivalent. [Paragraph 5.16.3 of NPS EN-1].	The WFD Assessment (Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES) includes a description of the baseline environment and an assessment of the impacts on water quality, resources and physical characteristics. Climate change is considered in **section 3.7** of this report and is also detailed within the FRA (Volume 3 Appendix 2.3: Flood risk assessment of the ES) and the Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22). The documents take into account how rainfall patterns will change as a result of climate change, and the Conceptual Drainage Strategy presents calculations to demonstrate the drainage strategy for the converter site is able to accommodate increasing volumes of surface water runoff associated with the effects of climate change.
Where possible, applicants are encouraged to manage surface water during construction by treating surface water runoff from exposed topsoil prior to discharging and to limit the discharge of suspended solids e.g. from car parks or other areas of hard standing, during operation. Applicants are encouraged to consider protective measures to control the risk of pollution to groundwater beyond those outlined in River Basin Management Plans and Groundwater Protection Zones – this could include, for example, the use of protective barriers. [paragraph 5.16.5 – 5.16.6 of NPS EN-1].	An Outline Pollution Prevention Plan forms Appendix A to the Outline On-CEMP (document reference 7.7), which forms part of the application for development consent. Additionally, a Construction Drainage Strategy would be developed post-consent and in accordance with the Outline On-CEMP (document reference 7.7), which outlines the measures and details to be incorporated into the strategy. The Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22) includes SuDS features, pollution mitigation measures and allowances for climate change. The drainage scheme will provide pollution

Summary of NPS requirement	How and where considered in the ES
	mitigation measures to the water environment during the operation stage of the Proposed Development.
The Environmental Statement should in particular describe: • The existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges; • Existing water resources affected by the proposed project and the impacts of the proposed project on water resources, noting any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Abstraction Licensing Strategies) and also demonstrate how proposals minimise the use of water resources and water consumption in the first instance; • Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics; • Any impacts of the proposed project on water bodies or protected areas (including shellfish protected areas) under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and source protection zones (SPZs) around potable groundwater abstractions; • How climate change could impact any of the above in the future; and • Any cumulative effects [Paragraph 5.16.7 of NPS EN-1].	The WFD Assessment (Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES) has been undertaken in accordance with the Planning Inspectorate Advice Note called Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Planning Inspectorate, 2024). The assessment considers the potential impact of the Proposed Development within the Onshore Infrastructure Area during the construction, operation and maintenance, and decommissioning. The WFD assessment and the proposed measures adopted as part of the Proposed Development have taken into account the requirements of the South West River Basin Management Plan (RBMP) and WFD to ensure all potential impacts on the water environment are mitigated to within acceptable levels including drinking water protected areas associated with public and private abstractions. EA and DCC have been consulted during the preparation of the WFD assessment. The impact on hydromorphological supporting conditions to the biological elements of ecological status have been considered in the WFD assessment. The document has undertaken an assessment of the water bodies and associated protected areas including designated shellfish waters and drinking water protected areas. Impacts to peak river flow, peak rainfall intensity and sea level rise as a result of climate change has been described and taken into account within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. Where appropriate, mitigation measures have been applied. A cumulative impact assessment of the water environment has been undertaken in Volume 2, Chapter 4: Geology, Hydrogeology and Ground Conditions and Volume 2, Chapter 3: Hydrology and flood risk of the ES.
The Secretary of State should consider whether mitigation measures are needed over and above any which may form part of the project application. A construction management plan may help codify mitigation at that stage. The risk of impacts on the water environment can be reduced through careful design to facilitate adherence to good pollution control practice. For example, designated areas for storage and unloading, with appropriate drainage facilities, should be clearly marked. The impact on local water resources can be minimised through planning and design for the efficient use of water, including water recycling. If a development needs new water infrastructure, significant supplies or impacts other water supplies,	Flood risk mitigation measures are presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. An assessment of effects to hydrology and flood risk has been undertaken as part of this chapter, and commitments (mitigation measures) are detailed within **Table 3.25.** Appropriate mitigation measures to reduce the impacts on the water environment are set out in the Outline On-CEMP which has been prepared as part of the application. This includes measures relating to control of impacts to the water environment during construction, as set out in **Table 3.25.**

Summary of NPS requirement	How and where considered in the ES
the applicant should consult with the local water company and the EA. [paragraphs 5.16.8 to 5.16.10, NPS EN-1].	
Activities that discharge to the water environment are subject to pollution control. The considerations set out in Section 4.12 on the interface between planning and pollution control therefore apply. These considerations will also apply in an analogous way to the abstraction licensing regime regulating activities that take water from the water environment, and to the control regimes relating to works to, and structures in, on, or under controlled waters. [paragraph 5.16.11 of NPS EN-1].	A Construction Drainage Strategy would be developed post-consent and in accordance with the Outline On-CEMP (document reference 7.7), which outlines the measures and details to be incorporated into the strategy. The Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22) includes SuDS features, pollution mitigation measures and allowances for climate change. The drainage scheme will provide pollution mitigation measures to the water environment during the operation stage of the Proposed Development. Potential impacts from pollution and contamination are assessed within **section 3.10** and **section 3.12.**
The Secretary of State must also consider duties under other legislation including duties under the Environment Act 2021 in relation to environmental targets and have regard to the policies set out in the Government's Environmental Improvement Plan 2023. [paragraph 5.16.13 of NPS EN-1].	The assessment and the proposed mitigation measures have taken into account the requirements of the RBMP and WFD (see Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES) to ensure all potential impacts on the water environment are mitigated to within acceptable levels. Mitigation measures are presented within **Table 3.25**.
The Secretary of State should be satisfied that a proposal has regard to current River Basin Management Plans and meets the requirements of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (including regulation 19). The specific objectives for particular river basins are set out in River Basin Management Plans. The Secretary of State must refuse development consent where a project is likely to cause deterioration of a water body or its failure to achieve good status or good potential, unless the requirements set out in Regulation 19 are met. A project may be approved in the absence of a qualifying Overriding Public Interest test only if there is sufficient certainty that it will not cause deterioration or compromise the achievement of good status or good potential. The Secretary of State should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans and Shoreline Management Plans [Paragraph 5.16.14 – 5.6.15 of NPS EN-1].	The WFD assessment (Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES) has considered the South West RBMP 2022-2027. The WFD assessment has been undertaken to demonstrate that the Proposed Development is compliant with the requirements of the WFD and the implementing legislation in England and Wales, i.e. Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The assessment and the proposed mitigation measures have taken into account the requirements of the RBMP, and in particular the environmental objectives of the water bodies affected, to ensure all potential impacts on the water environment are mitigated to within acceptable levels. Therefore, the achievement of the environmental objectives of the water bodies within the WFD study area will not be compromised as a result of the project activities associated with the Proposed Development. The shoreline management plan is defined and discussed within the FRA Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and the potential impacts to the Landfall at Cornborough Range which is detailed within the shoreline management plan is discussed within **section 3.10** and **section 3.12.**
The Secretary of State should consider proposals to mitigate adverse effects on the water environment and any enhancement measures put forward by the applicant and whether appropriate requirements should be attached to any development consent	An assessment and the mitigation measures proposed as part of the WFD assessment (Volume 3 Appendix 3.2: Onshore Water Framework Directive Assessment of the ES) has taken into account the requirements of the RBMP, and in particular the

Summary of NPS requirement	How and where considered in the ES
and/or planning obligations are necessary [Paragraph 5.16.16 NPS EN-1].	environmental objectives of the water bodies affected, to ensure all potential impacts on the water environment are mitigated to within acceptable levels. Therefore, the achievement of the environmental objectives of the water bodies within the WFD study area will not be compromised as a result of the project activities associated with the Proposed Development.
NPS EN-3	
Whilst offshore wind farms will not be affected by flooding, applicants should demonstrate that any necessary land-side infrastructure (such as cabling and onshore substations) will be appropriately resilient to climate-change induced weather phenomena. Similarly, applicants should particularly set out how the proposal would be resilient to storms. [Paragraph 2.3.8 of NPS EN-3].	Resilience to storms is discussed in Volume 3, Chapter 8: Physical Processes of the ES, in relation to the intertidal area. The resilience to flood risk of the onshore elements of the Proposed Development is set out within this chapter and Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and the climate change chapter (Volume 4, Chapter 1: Climate Change of the ES).
NPS EN-5	
As climate change is likely to increase risks to the resilience of some of this infrastructure, from flooding for example, or in situations where it is located near the coast or an estuary or is underground, applicants should in particular set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it has been designed to be resilient to: • flooding, particularly for substations that are vital to the network; and especially in light of changes to groundwater levels resulting from climate change; • the effects of wind and storms on overhead lines; • higher average temperatures leading to increased transmission losses; • earth movement or subsidence caused by flooding or drought (for underground cables); and • coastal erosion – for the landfall of offshore transmission cables and their associated substations in the inshore and coastal locations respectively. [Paragraph 2.3.2 of NPS EN-5].	Climate change is considered in Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and Volume 4, Chapter 1: Climate Change of the ES. Climate change has been taken into account in the characterisation of the baseline and future baseline environment of the Volume 2, Chapter 3: Hydrology and flood risk of the ES (see **section 3.7**). An assessment of an increase of peak river flow, peak rainfall intensities and sea level rise driven by climate change has been made within the FRA to the end of the construction phase for the Landfall and Onshore HVDC Cable Corridor and HVAC Cables and the operational and maintenance phase for the Converter Site. In regard to coastal erosion, Volume 3, Chapter 8: Physical Processes of the ES provides details relating to the intertidal area and coastal erosion. The resilience to flood risk of intertidal and onshore elements of the Proposed Development is set out within this chapter and Volume 3, Appendix 3.1: Flood Risk Assessment of the ES.

The National Planning Policy Framework

3.2.20 The National Planning Policy Framework (NPPF) was published in 2012 and updated in 2018, 2019, 2021, 2023 and 2024 (Ministry of Housing, Communities and Local Government, 2024). The NPPF sets out the Government's planning policies for England.

3.2.21 The Government published proposed reforms to the NPPF for consultation on 30 July 2024 with the consultation period ending on 24 September 2024 (Ministry of Housing, Communities and Local Government, 2024).

3.2.22 **Table 3.2** sets out a summary of the NPPF policies relevant to this chapter.

Table 3.2: Summary of NPPF requirements relevant to this chapter

Policy	Key provisions	How and where considered in the ES
Paragraph 173	A site-specific FRA is required for all proposals for new development in Flood Zones 2 and 3, and for any proposed development covering an area of 1 hectare (ha) or greater in Flood Zone 1.	The approach to flood risk is presented in Volume 2, Appendix 3.1: Flood Risk Assessment, of the ES.
Paragraphs 165-167	New development should take into account climate change and that appropriate mitigation should be provided. It states that inappropriate development should be located away from high risk areas and a sequential risk-based approach should be applied through the local planning system to the location of development.	Sequential and exception tests are presented within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.

3.2.23 The draft NPPF includes similar provisions as the current designated NPPF. The draft NPPF has been reviewed and there are no material updates for hydrology and flood risk.

3.2.24 The Planning Practice Guidance (PPG) (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government, 2023) supports the NPPF and provides guidance across a range of topic areas.

Table 3.3: Summary of NPPG relevant to this chapter

Policy	Key provisions	How and where considered in the ES
PPG ID7	PPG ID7 provides planning guidance for Flood Risk and Coastal Change provides additional guidance in the implementation of the NPPF in relation to development and flood risk. This includes information relating to the following: • the sequential approach, • the exception test, • addressing residual flood risk • Reducing the causes and impacts of flooding • Flood resistance and resilience • Flood zone and classification and flood risk vulnerability • Flood risk activity permits	The FRA has been undertaken in line with NPPF and PPG ID7 for the Converter Site, Onshore HVDC Cable Corridor and HVAC Cables (see Volume 2, Appendix 3.1: Flood Risk Assessment of the ES).

Local Planning Policy

3.2.25 The onshore elements of the Proposed Development are located within the administrative area of Torridge District Council (and Devon County Council at the County level). The relevant local planning policies applicable to hydrology and flood risk based on the extent of the study areas for this assessment are summarised in **Table 3.4**.

Table 3.4: Summary of local planning policy relevant to this chapter

Policy	Key provisions	How and where considered in the ES
North Devon and Torridge Local Plan		
Policy ST03 Adapting to Climate Change and Strengthening Resilience	*'Development should be designed and constructed to take account of the impacts of climate change and minimise the risk to and vulnerability of people, land, infrastructure and property by* • *locating and designing development to minimise flood risk through:* • *avoiding the development of land for vulnerable uses which is or will be at risk from flooding;* • *managing and reducing flood risk for development where that has wider sustainability or regeneration benefits to the community, or where there is no reasonable alternative Site;* • *reducing existing rates of surface water runoff within Critical Drainage Areas;* • *upgrading flood defences and protecting key transport routes from risks of flooding;* • *re-establishing functional flood plains in accordance with the Shoreline Management Plan, Flood Risk Management Plan and Catchment Action Plan;* • *locating development to avoid risk from current and future coastal erosion;* • *adopting effective water management including Sustainable Drainage Systems, water quality improvements, water efficiency measures and the use of rainwater;* • *ensuring development is resilient to the impacts of climate change through making effective use of renewable resources, passive heating and cooling, natural light and ventilation;* • *ensuring risks from potential climate change hazards, including*	Volume 2, Appendix 3.1: Flood Risk Assessment of the ES has been undertaken in line with the NPPF, PPG ID7, and Local Planning Policy. The assessment has been made to all sources of flood risk and includes an allowance for the impacts of climate change to peak river flow, sea level rise and peak rainfall intensities. Development has been steered towards areas of lowest flood risk (Flood Zone 1). Mitigation measures have been proposed, where required, to ensure flood risk from all sources and vulnerability of site users during the development lifetime is managed and will be secured through the requirements of the DCO. The Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22) includes SuDS features, pollution mitigation measures and allowances for climate change.

Policy	Key provisions	How and where considered in the ES
	pollutants (of air and land) are minimised to protect and promote healthy and safe environments; • *conserving and enhancing landscapes and networks of habitats, including cross-boundary green infrastructure links, strengthening the resilience of biodiversity to climate change by facilitating migration of wildlife between habitats and improving their connectivity;* • *protecting and integrating green infrastructure into urban areas, improving access to natural and managed green space; and* • *promoting the potential contribution from ecosystem services that support adaptation to climate change.'*	
Policy ST09: Coast and Estuary Strategy	• *'The integrity of the coast and estuary as an important wildlife corridor will be protected and enhanced. The importance of the undeveloped coastal, estuarine and marine environments, including the North Devon Coast Areas of Outstanding Natural Beauty, will be recognised through supporting designations, plans and policies. The undeveloped character of the Heritage Coasts will be protected.* • *Water quality will be improved where it has been affected by human activity.* • *Development within the Undeveloped Coast and estuary will be supported where it does not detract from the unspoilt character, appearance and tranquillity of the area, nor the undeveloped character of the Heritage Coasts, and it is required because it cannot reasonably be located outside the Undeveloped Coast and estuary.'*	The assessment and the proposed mitigation measures have taken into account the requirements of the River Basin Management Plan and WFD to ensure all potential impacts on the water environment are mitigated to within acceptable levels (see Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES).

Relevant Guidance

3.2.26 The baseline assessment is informed by best practice guidance set out within the Design Manual for Roads and Bridges (DMRB) Sustainability and Environment Appraisal; LA 113 road drainage and the water environment document (Highways England *et al*., 2020). Whilst this relates to road schemes, it is accepted that cable route projects can also follow the guidance due to their linear nature.

3.2.27 The hydrology and flood risk baseline environmental conditions that require definition in line with LA113 include the following:

- Surface water:
  - Water quality: informed by WFD status, number and details of abstractions, discharges, and pollution incidents.
  - Hydromorphology: informed by size and flows of water bodies.
- Groundwater:
  - Water quality: informed by WFD status, number and details of abstractions, discharges, pollution incidents, aquifer designations and vulnerability.
  - Levels and flow: informed by size and flows of groundwater bodies.
  - Dependant ecosystems: informed by details of downstream ecologically designated sites.
- Flood impacts (informed by the FRA (see Volume 2, Appendix 3.1: Flood Risk Assessment of the ES)).

3.3 Consultation and Engagement

Scoping

3.3.1 In January 2024, Xlinks 1 Limited ('the Applicant') submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects for the construction, operation and maintenance and decommissioning phases of the Proposed Development. It also described those topics or sub-topics which are proposed to be scoped out of the EIA process and provided justification as to why the Proposed Development would not have the potential to give rise to significant environmental effects in these areas.

3.3.2 Following consultation with the appropriate statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 7 March 2024. Key issues raised during the scoping process specific to hydrology and flood risk are listed in **Table 3.5**, together with details of how these issues have been addressed within the ES.

Table 3.5: Summary of Scoping Responses

Comment	How and where considered in the ES
Planning Inspectorate	
'*No direct reference is made to the potential requirement for dewatering activities in Section 4 of the Scoping Report, although it is noted that dewatering is referenced as an example activity in Table 7.4.4 and at paragraph 7.5.54 in respect of potential inter-related effects between the hydrology and flood risk chapter and hydrogeology, geology and ground conditions chapter.* *The ES should provide a full description of any such activities and present an assessment of any resulting likely significant effects, where these could arise. The Applicant's attention is directed to the comments of the Environment Agency (EA) at Appendix 2 of this Opinion with regards to dewatering and permits*.'	Dewatering is discussed within Volume 2, Chapter 4: Hydrogeology, Geology and Ground Conditions of the ES. Mitigation measures relating to dewatering activities adopted as part of the Proposed Development are presented within **Table 3.25**.
'*Several aspect chapters in the Scoping Report refer to fixed distance study areas with no explanation as to why these have been selected. The ES should ensure the study area for each aspect reflects the Proposed Development's ZoI and the impact assessment should be based on the ZoI from the Proposed Development with reference to potential effect pathways. Clear justification should be provided to support any distances applied*.'	The study area reflects the likely zone of influence by hydrological receptors. Justification for the buffer zones for hydrology and flood risk are provided within **section 3.6**.
'*It is unclear from the Scoping Report what potential effects on statutory designated sites are to be included in the impact assessment. The Inspectorate notes the statement that the Proposed Development would not directly affect the Torridge Estuary SSSI/LNR and would avoid its primary estuarine habitats by drilling under using HDD. At present there is no information in the Scoping Report to confirm the likely proximity of construction activity to the designated sites and their interest features, such as the likely location of HDD exit/entry points, compounds, and haul roads.* *The SSSI and LNR are designated for their important estuarine habitats, plants and bird species. The Inspectorate considers there is the potential for likely significant effects during construction (and decommissioning) to these sites and their features from potential changes to air quality, including dust deposition, changes to water quality, including proximity of HDD and accidental release of drilling fluids such as bentonite, and disturbance to species. The ES should include an assessment of such impacts to designated sites and features, where likely effects could occur*.'	The location of HDD crossing sites and associated compounds are presented in Volume 1, Appendix 3.2: Onshore Crossing Schedule of the ES. These locations have been considered within the hydrology and flood risk assessment. The impact of contaminated runoff on the quality of surface water and groundwater receptors' is discussed within **sections 3.10** and **3.12.** Mitigation measures are detailed within **Table 3.25**, which includes the measure that the trenchless crossing at the River Torridge would be at least 15 m below the hard river bed. Furthermore, HDD (or other trenchless methodology) entry and exit points will be located at least: • 10 m away from the banks of ordinary watercourses, • 16 m from banks of the River Torridge, a tidal EA Main River and the landward toe of associated formal and informal flood defences. Impacts on designated sites due to potential changes to air quality and disturbance to species are considered within Volume 2, Chapter 7: Air Quality and Volume 2, Chapter 1: Onshore Ecology and Nature Conservation, respectively.
'*Contaminated runoff impact on the quality of ordinary watercourses, main rivers and ground receptors during operation and maintenance.*	This has been scoped out of the assessment. Activities associated with the operation and maintenance of the onshore elements of the Proposed Development are unlikely to generate

Potential for contaminated runoff from operation and maintenance of the proposed converter station and/ or Alverdiscott Substation Connection Development is not referred to in Table 7.4.4 or Table 7.4.5. For the avoidance of doubt, the Inspectorate advises that this matter should be scoped into the impact assessment, or it should otherwise be explained in the ES, with evidence of agreement from relevant consultation bodies, why significant effects are not likely to occur. See also the Inspectorate's comment at ID 2.1.5 above in this regard.'	contaminated run-off. Furthermore, the drainage strategy for the Converter Site would include measures to treat any pollution or contamination on-site. Further rationale for scoping out this impact during operation and maintenance phase is discussed in greater detail within **Table 3.8**.
'*Increased flood risk from damage to existing flood defences during operation. The Scoping Report proposes to scope this matter out but does not present any reasoning. The Inspectorate notes that there are formal flood defences along the banks of the River Torridge (Paragraph 7.4.22 of the Scoping Report), which the proposed Onshore HVDC Cable Corridor would cross. However, it is unclear where the flood defences are located and whether the presence of the cable during operation could affect them. This matter should be scoped into the assessment, or it should otherwise be explained in the ES, with evidence of agreement from relevant consultation bodies, why significant effects are not likely to occur*.'	As detailed within **Table 3.8,** this impact during operation and maintenance phase has been scoped out. This is because it is unlikely that any operation and maintenance activities would impact the integrity (or efficacy) of existing flood defences.
'*Damage to existing field drainage and existing water pipelines during operation. The Scoping Report proposes to scope this matter out but does not present any reasoning. Given the nature of the Proposed Development and the limited operational maintenance requirements, as described in Chapter 4 of the Scoping Report, the Inspectorate considers it is unlikely that damage would be caused to field drainage and water pipelines during operation. This should be confirmed in the ES. Where significant effects are likely, these should be considered in the assessment*.'	As detailed within **Table 3.8**, it is unlikely that damage would be caused to field drainage during operation and maintenance. Therefore, this matter has been scoped out.
'*Flood risk assessment (FRA) climate change allowances. The Scoping Report states that the EA's FRA climate change allowances guidance from 2020 would be used to inform the assessment. The Inspectorate advises the most up-to-date iteration of the climate change allowances (as relevant to the Proposed Development) should be used in the assessment, noting that updates have been made since 2020*.'	The latest climate change guidance by the EA updated in May 2022 has been used within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances).
'*The Scoping Report states that the landfall area of the Proposed Development would be located within Flood Zone 3. It does not specify whether it is Flood Zone 3a or 3b. The ES should distinguish between Flood Zones 3a and 3b to determine which parts of the site are in areas of 'high probability of flooding' and 'functional floodplain'. This should be shown on a figure. It should specify what infrastructure will be in which flood risk zones. The ES should explain what mitigation is in place, including any requirement for compensatory flood storage, and how this would be secured through the DCO*.'	As assessed within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES, extents of Flood Zone 3 at the Landfall are considered to be tidal in nature. Extents of Flood Zone 3 across the remainder of the study area are associated with fluvial flows from small ordinary watercourses. Due to data availability, the extent of Flood Zone 3b is informed by the extent of Flood Zone 3. Permanent development includes the converter stations and their associated access and egress

	Proposed permanent development is located within Flood Zone 1. Due to its vulnerability classification and location within Flood Zone 1, 2, 3a and 3b, the Landfall and Onshore HVDC Cable Corridor has been subject to and have deemed to have passed the sequential test and exception test (see Volume 2, Appendix 3.1: Flood Risk Assessment of the ES). Aside from highways improvements, all temporary and permanent elements of the Proposed Development are located within Flood Zone 1 aside from cables which pass underneath extents of Flood Zones 3 via HDD. HDD compounds which include the entry and exit pits are all located within Flood Zone 1. In regards to highways improvements located within Flood Zone 3, these elements of development relate to junction upgrades and road widening and are expected to tie into existing ground levels. As such, no floodplain displacement will occur and no floodplain compensation will be required.
'*The Scoping Report contains limited information about the existing flood defences on the River Torridge, which could be affected by the Proposed Development. The ES should clearly include in the baseline, a description of existing (and where relevant, proposed) flood defences that could be impacted by the Proposed Development, together with figures showing their location. Effort should be made to agree the extent of baseline information required with relevant consultation bodies, including the EA*.'	Location and description of flood defences upon either bank of the River Torridge are provided within this chapter and Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. An Expert Working Group (EWG) meeting was undertaken in April 2024 to discuss baseline information to be provided within the ES and ES. RPS submitted two technical notes to the EA in May and October 2024 detailing flood risk data limitations, the assessment approach of flood risk to the development and anticipated impacts from an increase in peak river flow and sea level rise as a result of climate change. The EA agreed to the approach which has since been incorporated within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and has been submitted as part of the DCO application.
'*The Scoping Report states that no water sampling or analysis of existing watercourses and ground receptors within the study area is proposed to inform the assessment of effects from contaminated runoff. It is proposed to rely on desk-based information. The Inspectorate advises that effort should be made to seek to agree the requirement for water sampling and analysis with relevant consultation bodies, including the EA*.'	Classification data for each Water Framework Directive (WFD) waterbody within the study area from 2019 and 2022 has been used to inform the water quality baseline within the study area. As such, additional surface water sampling is not expected to be required. Taking a precautionary approach in assuming surrounding water bodies have achieved/maintained 'good' status at the time when construction begins, the surface watercourses and groundwater bodies within the study area are to be assessed with a WFD status of 'good'. 'The impact of contaminated runoff on the quality of surface water and groundwater' which discusses how mitigation measures adopted as part of the Proposed Development will ensure no degradation to WFD waterbodies will occur. Mitigation measures are presented within **Table 3.25**. Following submission of the DCO and during detailed design the need for water sampling will be reviewed and if necessary, consultation will be

	undertaken with the relevant consultees including the EA.
'*In addition to potential for contaminated run-off during construction, the assessment should describe how sewage from construction welfare facilities would be discharged/ managed and assess any significant effects likely to occur*.'	This impact is discussed within **sections 3.10** and **3.12** 'the impact of contaminated runoff on the quality of surface water and groundwater'.
'For the avoidance of doubt, the assessment should also consider impacts from increased flood risk from additional surface water runoff arising at the existing Alverdiscott substation, if extension or upgrade works are proposed in the DCO, and for any highways' improvements, where significant effects are likely to occur (in addition to impacts at the converter station). The Inspectorate's comment at ID 2.1.5 with regards to the assessment approach, dependent on whether the Alverdiscott Substation Connection Development works are within the DCO or subject to a separate consenting process, also apply.'	Alverdiscott substation is no longer part of the DCO and would be taking forward by National Grid Electricity Transmission (NGET).
'*In addition to field drainage and water pipelines, the assessment should also identify any land drains and/ or utilities infrastructure (e.g. foul sewer or oil-insulated cables) that may be present and assess potential impacts from damage to this infrastructure, where significant effects are likely to occur*.'	This is covered within **section 3.10** and **section 3.12** 'the impact of damage to existing water supply and drainage infrastructure'.
'*The Scoping Report states that surface water attenuation modelling would be undertaken to inform the assessment where appropriate. Effort should be made to agree the scope of any modelling required to inform the assessment with relevant consultation bodies, e.g. the EA and lead local flood authority (LLFA). If desk-based analysis only is relied upon, the ES must clearly explain why this data is sufficient to establish the baseline from which to undertake an assessment*.'	Noted. The Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22) and has been prepared in line with national and local policy guidance and technical standards. The climate change allowance to be incorporated within the drainage strategy has been discussed and agreed with the LLFA within the April 2024 meeting with the LLFA and EA. A meeting with the LLFA in October 2024 discussed and agreed pollution prevention measures. These are included in the Outline Pollution Prevention Plan which forms Appendix A to the Outline On-CEMP (document reference 7.7).
'*The Inspectorate advises that an outline version of the proposed SFWMP should be submitted as part of the ES. It should include a description of any measures required to avoid impacts to surface water flow paths and how reinstatement works would be carried out to avoid impacts on surface water flooding*.'	A Construction Drainage Strategy is proposed, which would incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable during the construction stage. Details regarding the proposed Construction Drainage Strategy has been included within the Outline On-CEMP (document reference 7.7) which forms part of the application for development consent. Mitigation measures adopted as part of the Proposed Development are presented within **Table 3.25**.
'*The Inspectorate advises that measures required to manage flood risk during construction, including to prevent sediment and debris flowing into surface watercourses/ drainage features, should also be described in the ES and demonstrably secured in*	Measures required to manage flood risk during construction, including to prevent sediment and debris flowing into surface watercourses/drainage features are detailed within the Outline On-CEMP (document reference 7.7). These measures would be secured as part of the DCO. Mitigation measures

the DCO. Such measures could be specified in the proposed onshore CEMP(s).'	adopted as part of the Proposed Development are also presented within **Table 3.25** of this chapter.
'*The Inspectorate advises that the ES should include reference to how the sequential and exception tests have been applied in the FRA, as relevant.*'	The Sequential Test and Exception Test has been undertaken within the Volume 2, Appendix 3.1: Flood Risk Assessment of the ES for the Onshore HVDC Cable Corridor which passes underneath of Flood Zone 3 and highway improvements located within Flood Zone 3. The Sequential Test and Exception Test have been deemed to have been passed for the Converter Site and due to being located within Flood Zone 1 and assessed to have a low risk of flooding from all sources.
'*Section 7.4 of the Scoping Report primarily focuses on risk from additional surface water runoff due to the Proposed Development but baseline information in the Scoping Report suggests that there is flood risk associated with other sources including coastal and reservoir. No reference is made to the potential for groundwater flood risk. Table 7.4.4 states that the FRA will assess flood risk from all sources. This should include figures showing relevant flood mapping for all sources. The FRA should inform the assessment in the ES, which should also consider all relevant forms of flood risk which the Proposed Development may be affected by or add to where these could give rise to likely significant effects.*'	Volume 2, Appendix 3.1: Flood Risk Assessment of the ES considers and assesses flood risk from all sources, including coastal, reservoir and groundwater.
'*The Scoping Report lists onshore and transitional WFD waterbodies at Table 7.4.2 but does not describe an approach to WFD assessment. The Inspectorate draws the Applicant's attention to Advice Note Eighteen: The Water Framework Directive, which provides a suggested outline methodology for WFD assessment. If the Proposed Development has potential to impact upon WFD waterbodies, then a WFD assessment should be submitted as part of the DCO application either as an appendix to the ES or as a separate WFD report. The findings of any WFD assessment should inform the ES. The location of WFD waterbodies should be shown on a figure. Where it is determined that a full WFD assessment is not required, a clear justification for this position with evidence of agreement with relevant consultation bodies should be provided.*'	Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment has been undertaken as part of the Volume 2, Chapter 3: Hydrology and Flood Risk of the ES. The methodology for the onshore WFD assessment is detailed in Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment. A screening assessment has been undertaken for submission within the ES, with further assessment to be undertaken for submission of the ES.
'*The Inspectorate advises that, in addition to the receptors identified in the Scoping Report, the ES should identify, describe and assess any likely significant effects to the following receptors:* • *Westward Ho! designated bathing water;* • *Permitted sites, discharges and/ or abstractions, reflecting data available from the EA's public register;* • *Jennetts Reservoir and Gammaton Lower Reservoir, in terms of their designated nitrate vulnerable zones; and* *Torridge Estuary designated shellfish water (refer to the Inspectorate's comments at ID 3.10.7 of this Opinion). The Applicant's attention is drawn to the*	Receptors assessed within this chapter are presented within **Table 3.24** This includes permitted sites, discharges and/or abstractions, Jennetts Reservoir, and Gammaton Lower Reservoir. Westward Ho! Designated bathing waters and Torridge Estuary designated shellfish waters are located outside of the Zone of Influence and thus have not been assessed. However, please see 'The impact of contaminated runoff on the quality of surface water and groundwater' which discusses how mitigation measures adopted as part of the Proposed Development will ensure no degradation to WFD waterbodies will occur. Mitigation measures are presented within **Table 3.25**.

comments of the EA (Appendix 2 of this Scoping Opinion).'	
'*The Scoping Report suggests that crossings of sensitive watercourses may be required. The ES should describe the nature of any proposed works within or in proximity of sensitive watercourses (i.e. main rivers and Ordinary watercourses). Information should be provided regarding the location, scale, and dimensions of any proposed watercourse crossings/ instream structures, as well as the nature of any associated construction works (e.g. dewatering, trenching, and HDD). The ES should consider the potential of such works to negatively impact watercourses within the study area, including the ecological status of any watercourses protected under the WFD such as the Torridge Estuary designated shellfish water. The results of the WFD Assessment should inform the ES.*'	Details on crossing methodologies are presented within Volume 1, Appendix 3.2: Onshore Crossing Schedule of the ES. Mitigation measures adopted as part of the Proposed Development is presented within **Table 3.25**. 'The impact of contaminated runoff on the quality of surface water and groundwater' discusses potential impacts and how mitigation measures adopted as part of the Proposed Development will ensure no degradation to WFD waterbodies will occur.
'*Surface and Foul Water Drainage (sections 4.6.19 onwards) note that measures to control surface water runoff would be put in place. These need to be robust enough to cope with potential increases in rainfall, similar to those levels experienced during the current winter. We are not aware of any sewer system in the vicinity, and therefore any foul water would have to be collected by septic tank or waste treatment plant. We are assuming, rightly or wrongly, that foul water generation would be from human activity rather than the plant itself. However, if any oil filled electrical equipment is to be used, what provision will be made to handle leakage or spillage.*'	Surface water drainage systems associated with the converter stations have been designed to accommodate the 1 in 100-year critical rainfall event with a 50% uplift for climate change, as per latest climate change guidance by the EA updated May 2022 (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances). Further information is presented within Volume 3, Appendix 3.1: Flood Risk Assessment of the ES. Foul water flows are to be addressed within the Operational Drainage Strategy. As no South West Water sewers are located within the vicinity of the Converter Site, it is expected foul flows will be collected via Septic tank located within the Converter order limits. The preferred method for controlling foul waste will be determined during detailed design and will depend on the availability and cost of a mains connection and the number of visiting hours staff will attend site.
Devon County Council	
'*The applicant has confirmed that they will produce surface water management proposals for the planning application (which they anticipate to be an outline for the converter stations). This surface water management design should be submitted with the Environmental Statement and will need to ensure that the cable route and other works, both during the construction and operational phases does not negatively impact on surface water flow paths. The applicant should also include details of how reinstatement works will be carried out to avoid additional impacts on surface water flooding.*'	Noted. Mitigation measures adopted as part of the Proposed Development are presented within **Table 3.25**. In order to manage impacts to field drainage, additional field drainage will be installed if required to ensure existing surface water flow paths are maintained during and after construction. This is detailed within the Outline On-CEMP (document reference 7.7), which forms part of the application for development consent.
'*Whilst the applicant has confirmed that they will assess surface water management for the converter station, the Environmental Statement should also show that consideration has been given to how surface water might also need to be managed for the Transition Joint and any upgrades/ expansion needed for the existing Alverdiscott substation. In addition, it should also give consideration to how any*	Following discussions with NGET, the anticipated Alverdiscott Substation Connection Development will not form part of the Proposed Development as it will be taken forward by NGET. However, it would be necessary to facilitate a connection to the national grid and thus, the ES considers likely cumulative effects that might arise. Cumulative effects are detailed in **section 3.13**.

highways improvements may impact on surface water management particularly if there are known surface water drainage issues.'	
'We welcome reference to an assessment of field drainage within the Hydrology section of the report but would like to highlight that in addition to field ditches (which could be classed as Ordinary Watercourses), land drains may also be present. As a result and because land drains may not show up on survey's and might not be known about, we would ask that the Environmental Statement addresses how the applicant intends to assess the presence of land drains and sets out the process for reinstatement should they be damaged or impacted upon during constructions works.'	We anticipate a walkover of the Proposed Development will be undertaken post-ES stage to identify any ordinary watercourses not present within desk-based data. A mitigation measure regarding the reinstatement of watercourses should be proposed if the Proposed Development is unable to commit to trenchless crossings at all ordinary watercourses. A mitigation measure regarding the reinstatement of field drainage post-construction should also be proposed.
'*The Environmental Statement should also acknowledge and assess the impacts during the construction phase on surface water management in order to prevent sediment and debris from flowing into drains and watercourses*.'	This will be addressed within 'The Impact of Contaminated Runoff on the Quality of Surface Water and Ground Receptors' which is presented within Volume 2, Chapter 3: Hydrology and flood risk of the ES.
'*The Environmental Statement shall ensure that temporary roads will include drainage features and outline where necessary if other features such silt fences, bunds, swales etc, have been considered or will be required. The management of any stockpiles and other materials and the requirement and location of any proposed site compounds, and associated cable laying during construction works will also need to be assessed to ascertain whether additional drainage features will be required*.'	A Outline Pollution Prevention Plan forms Appendix A to the Outline On-CEMP (document reference 7.7) which has been developed and submitted as part of the DCO Application. A Construction Drainage Strategy would be developed post-consent and in accordance with the Outline On-CEMP, which outlines the measures and details to be incorporated into the strategy. This includes measures to incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable during the construction stage. Mitigation measures adopted as part of the Proposed Development is presented within **Table 3.25.**
'*It would be useful for the applicant to highlight to readers that the operational phase of the cable route has been scoped out of the Environmental Statement and the reasons why*.'	Noted, rationale for scoping out this impact during operation and maintenance phase is discussed in greater detail within **Table 3.8**.
Environment Agency	
'*The River Basin Management Plan cites groundwater pollution as a concern; therefore the applicant should take particular care with regards to enacting pollution prevention measures*.'	An Outline Pollution Prevention Plan forms Appendix A of the Outline On-CEMP (document reference 7.7) and has been submitted as part of the DCO application. In terms of managing pollution during decommissioning, an onshore decommissioning plan(s) would be produced prior to decommissioning as detailed within Volume 1, Appendix 3.1: Commitments Register.
'*The study area for onshore effects will focus on the area landward of Mean High Water Springs. Designated bathing waters tend to be located below this point and there does not appear to be reference to the potential impact of the project on designated bathing waters within the scoping report. "Westward Ho!" designated bathing water is located to the Northeast of the proposed landfall location. Both onshore and offshore works could have the potential to impact this protected site. Potential risks to*	Westward Ho! Designated bathing waters and Torridge Estuary designated shellfish waters are located outside of the Zone of Influence and thus have not been assessed. However, mitigation measures adopted as part of the Proposed Development will ensure no degradation to WFD waterbodies will occur. Mitigation measures are presented within **Table 3.25**.

designated bathing waters should be incorporated into further assessments for both onshore and offshore works. We also recommend recognising The Bathing Water Regulations 2013 within the list of relevant legislation.'	
'*Table 7.4.1 lists the data sources which will be used to form the baseline assessment for hydrology and flood risk. The data sources listed will not provide information on permitted sites, discharges or abstractions. Knowledge of permitted activities within the study area is required to accurately describe the baseline environment and subsequently understand the risks posed by the project. We recommend incorporating the Environment Agency's Public Register as a data source for regulated sites, permitted discharges and licenced abstractions within the study area*.'	Volume 2, Chapter 3: Hydrology and Flood Risk of the ES is supported by Volume 2, Appendix 3.3: Surface water abstraction licences, discharge consents and pollution incidents, with data sourced from the EA's public register.
'*Section 7.4.18 lists a few designated areas that may intersect with the project. However, there is currently no reference to the Jennetts Reservoir and Gammaton Lower Reservoir nitrate vulnerable zones that the project intersects with. There is also no mention of the Torridge Estuary designated shellfish water which is downstream of the proposed watercourse crossing. If these areas are not included in the baseline conditions, then impacts to the water environment may not be properly understood. Mobilisation of sediment into either lake waterbodies could have a more significant long term impacts than compared to discharges into a more dynamic watercourse such as the sea. These designations should be incorporated into the baseline conditions and subsequent assessment*.'	Nitrate Vulnerable Zones and Designated Shellfish Waters have been identified as receptors within **Table 3.24** and assessed within Volume 2, Chapter 3: Hydrology and flood risk of the ES. 'The impact of contaminated runoff on the quality of surface water and groundwater' discusses how mitigation measures adopted as part of the Proposed Development will ensure no degradation to WFD waterbodies including Jennetts Reservoir and Gammaton Reservoirs will occur. Mitigation measures are presented within **Table 3.25**.
'*The impact of damage to existing water pipelines during construction has been scoped in for further assessment. However, no mention has been made regarding the impact of damage to other utilities, such as foul sewer or oil-insulated cables. Damage to any utilities within the area could result in impacts on the water environment and the survey for water pipelines should be extended to include a survey on all utilities within the area*.'	This ES chapter includes an assessment of the impact to water supply and drainage infrastructure, including clean water and sewers. It is expected a utilities survey will be undertaken at design stage to establish the location of below ground services including oil insulated cables prior to construction activities begin to reduce the impact of potential damage to underground services.
'*The impact of contaminated runoff during construction has been scoped in for further assessment but the fate of sewage produced from welfare facilities during construction is not currently clear and should be scoped in for further assessment*.'	The impact of contaminated runoff on the quality of surface water and groundwater is discussed within **section 3.10** and **section 3.12.** This includes contamination from sewage.
'*The Environment Agency supports the proposal to secure the requirement to obtain regulatory consent for water discharge activities within the CEMP. We would like to provide the applicant with the following advice regarding water discharge activity permits:* • *Unless an exemption applies, a permit is required to carry out a water discharge activity. Examples of water discharge activities include discharges of trade effluent (i.e. from dewatering), sewage (during construction and*	This advice has been noted. Consents/permits will be obtained for any works (e.g. discharge of water, dewatering) that may impact surface water or groundwater. This is set out within the Outline On-CEMP (document reference 7.7). Further information regarding mitigation measures relating to dewatering is detailed within **Table 3.25.**

operationally) and surface water run-off from areas of exposed soil. • *A permit may not be required for small-scale sewage discharges which can meet the general binding rules.* *The timeframes to determine permit applications can be significant. To avoid the risk of delays to the project we would encourage the applicant to engage with the Environment Agency's pre-application service at the earliest opportunity.*'	
'The project description describes below ground work during construction phases for buried cables and for onshore infrastructure and converter site. There are no references to de-watering in the report however it can often be required for construction below ground. *Dewatering activities can extend to the removal of water from excavations or more significant pumping of groundwater to lower local water levels for an excavation. These activities were previously exempt from requiring an abstraction license. A permit may now be required for activities that don't meet the conditions specified within the regulatory position statement on temporary dewatering from excavations to surface water.'*	Noted. Mitigation measures relating to dewatering to be adopted as part of the Proposed Development is presented within **Table 3.25**.
'*The WFD is referenced throughout the report and water bodies are identified in the Hydrology and flood risk section (Table 7.4.2). However, the scoping report only refers to a more detailed WFD assessment in the context of the impact of suspended contaminated sediments (table 8.9.6).* *The potential to contribute toward the achievement of the aims and objectives established by the WFD should be considered more fully for biological and physicochemical WFD elements as well as hydromorphological. Planning Inspectorate (2017) guidance entitled Advice Note 18: The Water Framework Directive provides an outline methodology for WFD as part of the DCO process.*'	Volume 2 Appendix 3.2: Onshore Water Framework Directive Assessment of the ES has been produced which has screened in the following key impacts. • The impact of contaminated runoff on the quality of waterbodies during construction and decommissioning phases. • The impact of habitat disturbance during construction, operation and maintenance and decommissioning phases. • The impact to flows/quantity, physical processes and hydromorphology of waterbodies during construction, operation and maintenance and decommissioning phases.
'*In addition to the watercourse cable crossings, we would expect any element of the development to have at least an 8m setback from any watercourses.*'	Mitigation measures adopted as part of the Proposed Development are presented within **Table 3.25** which details the proposed easements between temporary working areas and watercourses, including 10 m from the banks of ordinary watercourses and 16 m from the tidal EA Main River and the landward toe of associated flood defences.
'*The applicant must demonstrate that the proposals are safe and will not result in any damage to flood assets. For cable crossings this will require consideration of an appropriate depth below any watercourse or flood defences. Of particular concern is the impact on the River Torridge and its associated flood defences. The depth of the cable crossing will depend on where the applicant determines the river bed level to be (accounting for the silt deposited as a result of the river's tidal influence). We would like to encourage early discussions on the location of any cable crossings*	As a form of primary mitigation, the minimum crossing depth underneath watercourses would be as follows: • 5 m for Kenwith Stream; • 9 m for the tributary of Jennets Reservoir; and • 15 m for the River Torridge. Further detail on this mitigation measure is provided within **Table 3.25**. Regarding the potential impact on the River Torridge and associated flood defences, the impact of increased flood risk arising from damage to existing

for the River Torridge. We would recommend condition surveys and accurate location plans be produced for any flood defences within the vicinity of the proposed development.'	flood defences' is discussed within **section 3.10** and **section 3.12** of this chapter. A Flood Risk Activity Permit was submitted for geotechnical investigations within the River Torridge to ascertain the level of the hard bed and inform the depth of HDD below the Main River.
'In accordance with paragraph 5.6.7 of National Policy Statement EN-1, the Environmental Statement should 'assess the impact of the proposed project on coastal processes and geomorphology, including taking account of potential impacts from climate change. If the development will have an impact on coastal processes the applicant must demonstrate how the impacts will be managed to minimise adverse impacts on other parts of the coast'. Furthermore, paragraph 5.6.11 states 'the Secretary of State should be satisfied that the proposed development will be resilient to coastal erosion and deposition, taking account of climate change, during the project's operational life and decommissioning period'.'	Volume 2, Chapter 3: Hydrology and flood risk of the ES demonstrates the Landfall is located within Flood Zone 1 throughout the operational lifetime of the development. The Shoreline Management Plan, also defined and detailed within the Volume 2, Appendix 3.1: Flood Risk Assessment of the ES further classifies the section of shoreline the Landfall is taken from to not have any active intervention between 2005 and 2105 due to its assessed stability.
'*The impact of construction and decommissioning vibrations on watercourses and flood defences should be considered for inclusion within the Environmental Statement, accompanied by an appropriate monitoring plan.*'	This impact is discussed within **section 3.10** and **section 3.12:** 'The impact of increased flood risk arising from damage to existing flood defences'.
'*The potential for increase in flood risk due to the displacement of fluvial flood waters (loss of floodplain storage and impact on floodplain flow routes) where infrastructure is placed within the 1 in 100 year (plus an allowance for climate change) flood extent during construction, operation and decommissioning phases. If no impact is expected, then the applicant should provide justification.*'	As assessed within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES, extents of Flood Zone 3 at the Landfall are considered to be tidal in nature. Extents of Flood Zone 3 across the remainder of the study area are associated with fluvial flows from small ordinary watercourses. Due to data availability, the extent of Flood Zone 3b is informed by the extent of Flood Zone 3. Permanent development includes the Converter Stations and their associated access and egress Proposed permanent development is located within Flood Zone 1. Aside from highways improvements, all temporary and permanent elements of the Proposed Development are located within Flood Zone 1 aside from cables which pass underneath extents of Flood Zones 3 via HDD. HDD compounds which include the entry and exit pits are all located within Flood Zone 1. In regards to highways improvements located within Flood Zone 3, these elements of development relate to junction upgrades and road widening and are expected to tie into existing ground levels. As such, no floodplain displacement will occur and no floodplain compensation will be required.
'*Assessment as to how the proposed development will remain operational during tidal or fluvial flooding throughout its lifetime. Please note that in accordance with paragraph 5.8.11 of National Policy Statement EN-1, the Secretary of State should be satisfied that 'in flood risk areas the project is designed and constructed to remain safe and*	Permanent development includes the Converter Stations and their associated access and egress Proposed permanent development is located within Flood Zone 1. All temporary and permanent elements of the Proposed Development are located within Flood Zone 1 aside from cables which pass underneath

operational during its lifetime, without increasing flood risk elsewhere'. In addition, given that the proposed converter stations are likely to be operated 24/7 by staff on-site, it is important that 'the project includes safe access and escape routes where required, as part of an agreed emergency plan, and that any residual risk can be safely managed over the lifetime of the development'. If all elements of the proposed development, including any temporary works needed for construction and decommissioning, are to be located outside of the fluvial and tidal floodplain then this should be confirmed. If this is not the case, we would recommend the above be scoped into the assessment unless an appropriate justification can be provided as to why this will not be appropriate.'	extents of Flood Zones 2 and 3 via HDD. HDD compounds which include the entry and exit pits are all located within Flood Zone 1.
'*Assessment of the impact of climate change on fluvial and tidal flood risk, with specific reference to the climate change allowances for peak river flow and sea level rise referenced in the government guidance 'Flood risk assessments: climate change allowances'. Additionally, with reference to Scoping Report Section 8.9.17, page 380 and Section 8.9.35 page 388, please consider whether future wave conditions need to be assessed, particularly for the decommissioning phase of the development*.'	RPS submitted two technical notes to the EA in May and October 2024 detailing flood risk data limitations, the assessment approach of flood risk to the development and anticipated impacts from an increase in peak river flow and sea level rise as a result of climate change. The EA agreed to the approach which has since been incorporated within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and has been submitted as part of the DCO application. Climate change allowances for peak river flow sea level rise are noted within **section 3.7** 'Future Baseline Conditions'. Climate change allowances are also discussed within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.
Please also consider the following guidance: Using Modelling for Flood Risk Assessments Guidance (December 2023). Available online: Using modelling for flood risk assessments - GOV.UK (www.gov.uk).	Noted. This guidance has been reviewed during the preparation of Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.
The Flood Estimation Handbook (FEH) Webservice available at: Home Page - FEH Web Service (ceh.ac.uk) may also be of interest, particularly when evaluating fluvial flood risk associated with some of the Ordinary Watercourses within the cable corridor route which have no associated Flood Zone mapping.	Noted, the FEH webservice has been used to inform the environmental baseline of this chapter.
Section 7.4.19 page 149 "The EA Flood Zones refer to the probability of flooding from rivers and sea in a given year, assuming no defences are in place and accounting for climate change". Please note, this statement is not correct, the flood zones do not account for climate change.	Noted, reference to climate change within this sentence has been removed.
'*Table 7.4.4 Impacts proposed to be scoped into the assessment for hydrology and flood risk page 153 "Baseline flood risk within the hydrology and flood risk study area for the Proposed Development will be determined using desk based analysis of flood risk mapping data published by the EA". Please bear in mind that it is important to check that any data used is suitable for your requirements and is representative of current baseline conditions and*	RPS submitted two technical notes to the EA in May and October 2024 detailing flood risk data limitations, the assessment approach of flood risk to the development and anticipated impacts from an increase in peak river flow and sea level rise as a result of climate change. The EA agreed to the approach which has since been incorporated within the FRA and has been submitted as part of the DCO application.

guidance. Please refer to the guidance on Using Modelling for Flood Risk Assessments for further details available online at: Using modelling for flood risk assessments - GOV.UK (www.gov.uk).'	
'*Avoiding flood risk through the sequential test is the most effective way of addressing flood risk because it places the least reliance on measures such as flood defences. In line with paragraph 161 of the NPPF, 'all plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property'. Paragraph 162 of the NPPF states that development 'should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The sequential approach should be used in areas known to be at risk now or in the future from flooding'.* *The Sequential Test is not required as part of the EIA scoping, however it should be adequately applied and evidenced within the flood risk chapter of the EIA*.'	The Sequential Test and Exception Test has been undertaken within the Volume 2, Appendix 3.1: Flood Risk Assessment of the ES for the Onshore HVDC Cable Corridor which passes underneath of Flood Zone 3 and highway improvements located within Flood Zone 3. The Sequential Test and Exception Test have been deemed to have been passed for the Converter Site and due to being located within Flood Zone 1 and assessed to have a low risk of flooding from all sources.
'*Flood Zone 3b has not been referred to in the scoping report, but would be important to consider in the EIA. The Local Authority's SFRA should define the extent of Flood Zone 3b. In accordance with paragraph 5.8.14 of NPS EN-1 Where essential energy infrastructure has to be located in Flood Zone 3b it should only be consented if the development will not result in a net loss of floodplain storage and will not impede water flows*.'	As assessed within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES, extents of Flood Zone 3 at the Landfall are considered to be tidal in nature. Extents of Flood Zone 3 across the remainder of the study area are associated with fluvial flows from small ordinary watercourses. Due to data availability, the extent of Flood Zone 3b is informed by the extent of Flood Zone 3. Permanent development includes the Converter Stations and their associated access and egress Proposed permanent development is located within Flood Zone 1. Aside from highways improvements, all temporary and permanent elements of the Proposed Development are located within Flood Zone 1 aside from cables which pass underneath extents of Flood Zones 3 via HDD. HDD compounds which include the entry and exit pits are all located within Flood Zone 1. In regards to highways improvements located within Flood Zone 3, these elements of development relate to junction upgrades and road widening and are expected to tie into existing ground levels. As such, no floodplain displacement will occur and no floodplain compensation will be required.
'*Construction/Decommissioning Environment Management Plan We would expect to be consulted on the Construction Environment Management Plan and the Decommissioning Environment Management Plan which should include: - A flood emergency response plan - Plans for the storage of construction materials (outside of the flood zone) - Flood defence vibration monitoring - Surveys for any works close to a flood defence to better understand*	An Outline On-CEMP (document reference 7.7) has been developed and included as part of the application for development consent.

defence's geometry, condition, composition and structure - Details of construction phasing to ensure there is no loss in flood storage at any point during construction.'	
'*Paragraph 4.6.19 states that an outline operational drainage strategy will be submitted with the application for DCO. It does not make reference to pollution prevention measures, although pollution prevention is mentioned in the construction drainage design. It is important that pollution prevention is considered in all relevant elements of the scheme, both during construction and operation*.'	An Outline Pollution Prevention Plan forms Appendix A to the Outline On-CEMP (document reference 7.7) submitted as part of the application for development consent. Furthermore, pollution prevention measures will be incorporated into the operational drainage strategy. Mitigation measures to be adopted as part of the Proposed Development is presented within **Table 3.25**.
'*Horizontal directional drilling (HDD) may be used to aid installation of the cables. This could involve the use of drilling muds and their use may require risk assessment to ensure they do not pose a risk to controlled waters. This is important within the Secondary aquifer and any other groundwater receptors that may be identified during the next stage of assessment (for example, private water supplies). The proposed use of directional drilling techniques should therefore be included in the CEMP*.'	Mitigation measures relating to the proposed HDD (or other trenchless crossing) sites are detailed within the Outline On-CEMP (document reference 7.7). An Outline Bentonite Breakout Plan has been developed and included as part of the application for development consent (document reference 7.21).
Paragraph 4.6.19 states that an outline operational drainage strategy will be submitted with the application for DCO. It does not make reference to pollution prevention measures, although pollution prevention is mentioned in the construction drainage design. It is important that pollution prevention is considered in all relevant elements of the scheme, both during construction and operation.	An Outline Pollution Prevention Plan has been included as part of the Outline On-CEMP (document reference 7.7) submitted as part of the application for development consent. Furthermore, pollution prevention measures will be incorporated into the operational drainage strategy. Mitigation measures to be adopted as part of the Proposed Development is presented within **Table 3.25**.
4.6.21 states that foul drainage may be collected in a septic tank. The applicant is advised to engage early with the Environment Agency regarding the possible need for a permit if a septic tank is taken forward as the chosen option.	Foul drainage proposals are discussed in further detail within Volume 1, Chapter 3: Project Description.
The Environment Agency supports the proposal to secure the requirement to obtain regulatory consent for water discharge activities within the CEMP. We would like to provide the applicant with the following advice regarding water discharge activity permits: *Dewatering activities can extend to the removal of water from excavations or more significant pumping of groundwater to lower local water levels for an excavation. These activities were previously exempt from requiring an abstraction license.* *Since 01 January 2018, new planned dewatering operations above 20 cubic meters a day will require a water abstraction license from us, prior to the commencement of dewatering activities at the site if they do not meet the criteria for exemption in The Water Abstraction and Impounding (Exemptions) Regulations 2017 Section 5: Small scale dewatering in the course of building or engineering works. It may also require a discharge permit if it falls outside of our regulatory position statement for de-watering discharges.*	This advice has been noted. Consents/permits will be obtained for any works (e.g. discharge of water, dewatering, water abstraction) that may impact surface water or groundwater. This is set out within the Outline On-CEMP (document reference 7.7). Further information regarding mitigation measures relating to dewatering is detailed within **Table 3.25.**

There is water availability for consumptive abstraction in North Devon catchments, more details can be found in the Abstraction Licensing Strategy. If any dewatering activity can be demonstrated to be discharged to the same source of supply without intervening use (i.e. non-consumptive), this will increase the likelihood of a licence being granted. Examples of (consumptive) intervening uses include: dust suppression; mineral washing; washing down machinery and potable supply. *Please note that the typical timescale to process a licence application is 9-12 months. The applicant may wish to consider whether a scheme-wide dewatering application rather than individual applications would be beneficial. We suggest talking to our National Permitting Service early in the project planning for further advice on whether a licence will be required.* *The applicant may also need to consider discharge of groundwater, especially if it is contaminated. More information can be found here, Discharges to surface water and groundwater: environmental permits - GOV.UK (www.gov.uk)*	
'*The development site is within or may impact on the following Sites of Special Scientific Interest:* • *Mermaid's Pool to Rowden Gut Site of Special Scientific Interest (SSSI)* • *Taw Torridge Estuary SSSI* • *Lundy SSSI* *The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects*.'	Receptors assessed within Volume 2 Chapter 3: Hydrology and flood risk of the ES are presented within **Table 3.24**. Lundy SSSI is located outside of the Zone of Influence and thus have not been assessed. However, please see 'The impact of contaminated runoff on the quality of surface water and groundwater' which discusses how mitigation measures adopted as part of the Proposed Development will ensure no degradation to WFD watercourses will occur. Mitigation measures are presented within **Table 3.25**.

Preliminary Environmental Information Report

3.3.3 The preliminary findings of the EIA process were published in the Preliminary Environmental Information Report (PEIR) on 16 May 2024. The PEIR was prepared to provide the basis for statutory public consultation under the Planning Act 2008. This included consultation with statutory bodies under section 42 of the Planning Act 2008.

3.3.4 A summary of the key items raised specific to hydrology and flood risk is presented in **Table 3.6,** together with how these issues have been considered in the production of this ES chapter.

Further Engagement

3.3.5 Throughout the EIA process, consultation and engagement (in addition to scoping and section 42 consultation) with interested parties specific to hydrology and flood risk has been undertaken.

3.3.6 A summary of the key items raised specific to hydrology and flood risk is presented in **Table 3.6,** together with how these issues have been considered in the production of this ES chapter.

Table 3.6: Summary of consultation relevant to this chapter

Date	Consultee and type of response	Issues raised	How and where considered in the ES
5 January 2024	South West Water email consultation	No public sewers located within proximity to the Converter Site and Alverdiscott Substation Connection Development.	Information has been incorporated within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.
5 January – 13 March 2024	EA freedom of information request	Product 4, 5 6 and 8 data requests for flood risk data within the study area.	Data was taken forward and presented within the first EWG meeting on the 8 April explaining data limitations and proposing ways forward.
5 January 2024	LLFA email consultation	Flood risk information request within proximity to the proposed permanent development associated with the converter site and Alverdiscott Substation Connection Development.	Information has been incorporated within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.
8 April 2024	EWG consultation meeting	Approach to Volume 2, Chapter 3: Hydrology and flood risk of the ES, including: • Identified receptors • Impacts scoped in and out • Mitigation measures currently proposed • Flood risk data limitations and discussions of ways forward	Initial comments have been incorporated within the ES and Volume 2, Appendix 3.1: Flood Risk Assessment of the ES. RPS submitted two technical notes to the EA in May and October 2024 detailing flood risk data limitations, the assessment approach of flood risk to the development and anticipated impacts from an increase in peak river flow and sea level rise as a result of climate change. The EA agreed to the approach which has since been incorporated within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and has been submitted as part of the DCO application.
24 June 2024	EA Section 42 Response	Vol. 1, Appendix 3.2: Outline Onshore CEMP	Noted, Outline On-CEMP (document reference 7.7) has been updated to include management measures for

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		Issue - Measures to manage pollution risks have not been established. Impact - Risk of detrimental impact on the environment. Failure to consider measures at an early stage increases the risk that the project encounters issues with treatment during the construction phase. Solution - Provide an Outline Pollution Prevention Plan and Outline Construction Drainage Strategy which incorporates mitigation to limit the impacts from contaminated runoff. The Outline Construction Drainage Strategy should assess the efficacy of proposed surface water treatment systems and should ensure that sufficient space for treatment is provided within the proposed red line boundary.	pollution risks. This includes the development of an Outline Pollution Prevention Plan, which forms Appendix A of the Outline On-CEMP (document reference 7.7) submitted as part of the DCO application.
24 June 2024	EA Section 42 Response	Vol. 1, Appendix 3.2: Outline Onshore CEMP Issue - The risks of construction on existing flood defences have not been adequately addressed. Impact - The risk of flooding to the surrounding area and to the construction works may be increased and opportunities for flood risk mitigation may be overlooked. Solution - The CEMP should include consideration of flood risk: • Plans for the storage of construction materials outside of the flood zone • Flood defence vibration monitoring	Plans for the storage of construction materials outside of the flood zone have been incorporated within the Outline On-CEMP (document reference 7.7), which forms part of the application for development consent.

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		• Surveys for any works close to a flood defence to better understand defence's geometry, condition, composition and structure. (If appropriate) details of any construction phasing to ensure there is no loss in flood storage at any point during construction.	
24 June 2024	EA Section 42 Response	Vol. 1, Appendix 3.2: Outline Onshore CEMP Issue - Abstractions have not been included as a potential sensitive receptor to pollution. Impact - Lack of knowledge of any local abstractions may result in possible pollutant pathways being overlooked. Solution - Local abstractions should be identified and considered as potential receptors.	Noted. Abstractions have been included as a potential sensitive receptor to pollution, as detailed within the Outline On-CEMP (document reference 7.7), submitted as part of the DCO application.
24 June 2024	EA Section 42 Response	Vol 2, Chapter 3: Hydrology and flood risk Issue - The drainage strategy for operational drainage from the Converter Site and Substation has not been provided. Impact - Risk of detrimental impact on the environment from contaminated drainage (including spills and firewater). Solution - The Outline Operational Drainage Strategy should detail the mitigation measures that will minimize the risks to water quality. These must be sufficient to reduce the risk of pollution from spills, or from firewater in the event of a fire.	Noted. Additional details regarding water quality and pollution treatment are provided as part of the Outline Operational Drainage Strategy submitted as part of the DCO application (document reference 7.22).

Date	Consultee and type of response	Issues raised	How and where considered in the ES
24 June 2024	EA Section 42 Response	Vol 2, Chapter 3: Hydrology and flood risk Issue - The impact from surface water run-off from across the site has not been adequately assessed. Impact - Contaminated Surface water run-off can pose a significant risk to water quality and the environment. If it is not considered, then potential impacts could be underestimated, or the mitigation may be insufficient. Solution - The impact of surface water run-off across the site should be incorporated into the assessment. The Outline Onshore CEMP should include the following: • Details on how corrective action will be decided upon and actioned if non-compliance with the CEMP is identified. • Details on how contracts will be managed to ensure the principal contractor will adhere to the CEMP. • Monitoring and reviewing procedures that will allow the Applicant to maintain oversight of the principal contractor's compliance with the CEMP and other environmental mitigation.	Noted. An Outline Pollution Prevention Plan has been provided as part of the application for development consent (document reference 7.7, Appendix A). This details the pollution prevention measures to be considered during the construction phase of the Proposed Development. Furthermore, the Outline On-CEMP (document reference 7.7) includes a section on the Construction Drainage Strategy to be developed.
24 June 2024	EA Section 42 Response	Vol 2, Chapter 3: Hydrology and flood risk Issue - Flood risk has not been adequately assessed. There is no assessment to demonstrate that development will avoid the 1 in 100 year, (plus an allowance for climate change), flood extent.	RPS submitted two technical notes to the EA in May and October 2024 detailing flood risk data limitations, the assessment approach of flood risk to the development and anticipated impacts from an increase in peak river flow and sea level rise as a result of climate change. The EA agreed to the

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		Impact - The future flood risk posed to/by the development may be underestimated resulting in insufficient flood risk mitigation measures. Solution - It must be demonstrated that no permanent above-ground development will be located within the 1 in 100yr fluvial flood extent, including an allowance for climate change. A lack of existing EA flood models should not be interpreted as a lack of fluvial flood risk. Where flood risk data, including climate change, does not exist, it is the responsibility of the developer to undertake this assessment and ensure there is sufficient data to inform their FRA.	approach which has since been incorporated within Volume 2, Appendix 3.1: Flood Risk Assessment of the ES and has been submitted as part of the DCO application.
24 June 2024	EA Section 42 Response	Vol.2 Chapter 3: Hydrology and flood risk Issue - The requirement for consents/permits relating to dewatering activities has been identified as Tertiary mitigation. However, no other water demands anticipated during the construction have been identified. Consumptive uses of water during construction can include on-site concrete production, dust suppression, wheel washing, or potable/domestic supply to workforce on-site. Impact - Failure to identify all potential water supply demands and the associated licence requirements, can result in lengthy project delays due to the licence determination process. Solution - Provide assessment of the impacts of abstraction from surface/	Noted. Abstractions have been added as a receptor within 'the impact of contaminated runoff on the quality of surface water and ground receptors'. No water abstractions are to be required as part of the Proposed Development.

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		groundwater (or the use of public water supply). Understanding potential restrictions affecting design will help to expedite the permitting process ahead of the construction phase.	
24 June 2024	EA Section 42 Response	Paragraph 4.15.1 states that intrusive ground investigations will be undertaken, and the findings will be used to verify the levels of risk and inform the requirement for any site remediation required. It goes on to say, in paragraph 4.15.2 that work will be carried out to, "identify the location and extent of Private Water Supplies (PWS as part of the work for the ES with further assessment as necessary". We welcome both recommendations. We are likely to request that a requirement regarding how unsuspected contamination is managed should be included in the Development Consent Order.	Prior to construction, geomorphological surveys will be undertaken on ordinary watercourses that may be crossed by trenched techniques. Surveys will be used to inform detailed design of crossing methodologies prior to construction. Indicative crossing methodologies are presented within Volume 1, Appendix 3.2: Onshore Crossing Schedule of the ES. A staged approach to risk assessment and investigation will be undertaken for identified sensitive surface and groundwater receptors including springs, PWS and ordinary watercourses at final design stage. This will include a water features survey. The work will inform crossing method statements and any mitigation measures required to minimise potential impacts.
24 June 2024	EA Section 42 Response	Typographical error: PEIR Main Report, Volume 2, Chapter 3: Hydrology and flood risk – Table 3.7 says 'into' instead of 'out of' with regards to what has been scoped out of the assessment. Incorrect information: Volume 2, Appendix 3.1: FRA Paragraph 1.5.26 currently reads: 'The EA Flood Zones refer to the probability of flooding from rivers and sea	Noted. To be amended prior to submission as part of the DCO application.

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		in a given year, assuming no defences are in place and accounting for climate change'. This is incorrect as the Flood Zones do not account for climate change. This mistake is also repeated in Paragraph 1.6.22.	
24 June 2024	Somerset Drainage Boards Consortium	All of the work seemed to be outside of the Somerset drainage board area, which cover the Axe and Brue, the Parrett and North Somerset area.	Noted.
	Devon County Council	It is noted and welcomed that the applicant has made an assessment of the construction, operational and decommissioning phases of the scheme and that the applicant has used 50% as the climate change value.	Noted.
	Devon County Council	At the Development Consent Order stage, the applicant will need to submit the detailed design of the proposed surface water drainage systems (unless this can be appropriately managed via a pre-commencement condition). The applicant should review Devon County Council's SuDS Guidance for details required, this guidance can be found here Sustainable Drainage System - Guidance for Devon (2023) - Flood Risk Management. Details will need to include at least the below: • Plans with proposed surface levels, surface water drainage features, pipework, outfalls • Sections of proposed above-ground surface water drainage features	An Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22) and includes measures to limit discharge rates and attenuate flows to maintain greenfield runoff rates at the Converter Site. The full Operational Drainage Scheme will be developed post-consent in line with the latest relevant drainage guidance notes in consultation. The Outline On-CEMP (document reference 7.7) contains information regarding surface water management during construction. If required, additional drainage will be installed to ensure the existing flow pathways are maintained during and after construction. The Outline On-CEMP

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		• Micro Drainage model outputs (or similar). Outputs might need to include pipework • Confirmation of any landowner permissions required for the outfalls from surface water drainage systems (if outfalls are not within land owned by the applicant) • Maintenance details (who will be responsible and how they will maintain (what activities are required and on what frequency)) • Exceedance flow routes • Construction surface water management plan • The applicant shall also assess whether the convertor stations (Bipole 1 and Bipole 2) and the access road and car park serving the convertor site will require drainage, and supporting details shall be submitted to support the findings of this assessment."	(document reference 7.7) forms part of the DCO application, and a full On-CEMP will be developed in accordance with the Outline On-CEMP (document reference 7.7).
	Devon County Council	The requirement for temporary drainage solutions such as filter drains for the haul roads and construction compounds shall be assessed and supporting details submitted as part of the supporting information for the Development Consent Order (DCO)."	A full Construction Drainage Strategy would be developed post-consent and in accordance with the outline Construction Drainage Strategy detailed within the Outline On-CEMP (document reference 7.7) which forms part of the application for development consent. The Construction Drainage Strategy will incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects

Date	Consultee and type of response	Issues raised	How and where considered in the ES
			on water quality or flood risk are reduced as far as practicable during the construction stage.
	Devon County Council	The applicant will need to provide details of the timing/ sequencing of events of the construction stage of the development in order to confirm when the permanent surface water drainage will be constructed. This will include details of when the temporary haul roads will be removed for example.	The indicative programme is presented within Volume 1, Chapter 3: Project Description. The full construction programme, including timelines for restorations and reinstatement will be confirmed at detailed design stage.
	Devon County Council	The applicant will need to take care in areas of surface water flow paths or surface water drainage issues and ensure that flow paths are not altered for example by ruts created by plant/ machinery/ vehicles. The applicant will also need to demonstrate that ground is reinstated to previous condition. If haul roads are proposed across flow paths or in areas of poor drainage/boggy ground, then the applicant will need to design to the conditions for example by installing pipes beneath the haul road to keep flow paths open.	The Outline On-CEMP (document reference 7.7) contains information regarding surface water management during construction. If required, additional drainage will be installed to ensure the existing flow pathways are maintained during and after construction. The Outline On-CEMP (document reference 7.7) forms part of the DCO application, and a final On-CEMP(s) will be developed in accordance with the Outline On-CEMP (document reference 7.7).
	Devon County Council	Looking at the Onshore Crossing Schedule (Volume 1; Appendix 3.2), there appears to be a number of potential Ordinary Watercourse crossings. We are of the belief that these Ordinary Watercourses will have baseflows. Therefore, the applicant will need to manage these flows appropriately if they will be trenching across the watercourses.	Where required, trenched techniques may be used for minor ditches or smaller watercourses that are frequently dry. In these cases, measures will be implemented to protect water quality and flow and these are detailed within the Outline On-CEMP (document reference 7.7). Prior to construction, geomorphological surveys will be undertaken on ordinary

Date	Consultee and type of response	Issues raised	How and where considered in the ES
			watercourses that may be crossed by trenched techniques. Surveys will be used to inform detailed design of crossing methodologies prior to construction. Indicative crossing methodologies are presented within Volume 1 Appendix 3.2: Onshore Crossing Schedule of the ES. A staged approach to risk assessment and investigation will be undertaken for identified sensitive surface and groundwater receptors including springs, PWS and ordinary watercourses at final design stage. This will include a water features survey. The work will inform crossing method statements and any mitigation measures required to minimise potential impacts.
	Devon County Council	Some of these crossings might be of culverts or subterranean flows (between the 'sinks' and 'issues' points on the OS Maps). Therefore, these crossings will need to be carefully designed if they cannot be avoided. The flows will need to continue to be conveyed. The applicant has noted, within sections 1.5.60 and 1.6.56 of the Flood Risk Assessment, that the Flood Risk Activity Permit and Land Drainage Consent processes will be 'disapplied and incorporated as protected provisions of the consent order'. The applicant should clarify how this could work. DCC's Flood and Coastal Risk Management Team will	The Outline On-CEMP (document reference 7.7) contains information regarding surface water management during construction. Measures to protect water quality and flow are detailed within the Outline On-CEMP which is to be submitted as part of the DCO application. Final On-CEMP(s) will be developed in accordance with the Outline On-CEMP. Any identified requirement for Land Drainage Consents during construction will be sought from the Environment Agency and/or Devon County Council (as Lead Local Flood Authority) as

Date	Consultee and type of response	Issues raised	How and where considered in the ES
		still need to log these as Land Drainage Consents to issue the certificates and charge for the service.	appropriate. This will be secured as a requirement of the DCO.

3.4 Study Area

3.4.1 The hydrology and flood risk study area (hereafter referred to as the 'study area') has been ascertained using professional judgement and focuses on where potential impacts are most likely to occur on hydrological and flood risk receptors.

3.4.2 The extent of the study area used for the assessment has been informed by the nature and scale of the Proposed Development, which predominantly consists of temporary construction activities associated with installation of below ground cables. The only permanent infrastructure associated with the Proposed Development are two converter stations and associated access and egress.

3.4.3 The EA Catchment Data Explorer Mapping which provides information regarding hydrological catchments within the Onshore Infrastructure Area of the Proposed Development. Waterbodies located within the study area are located within the North Devon and South West Transitional and Coastal (TraC) Management Catchments which, alongside 10 additional Management Catchments, form the South West Basin District.

3.4.4 The study area takes into account the range of potential impacts arising from activities associated with the Proposed Development. The zone of influence is deemed appropriate by the impacts expected to arise from the Proposed Development. Based on the above, the study area is defined as:

- The area of land to be temporarily or permanently occupied during the construction, operation and maintenance and decommissioning of the Proposed Development.
- Surface water and ground water receptors located within 1 km of the Converter Site;
- Hydrology and flood risk receptors located within 250 m of the Landfall (above Mean High Water Springs (MHWS)) and Onshore Infrastructure Area. The 250 m buffer is considered appropriate for data collection taking into account the likely zone of influence by hydrological receptors. The buffer has also been chosen to identify any existing receptors, assets or infrastructure that have the potential to be affected by temporary flood risk as a result of the Proposed Development.

3.4.5 Due to the nature and scale of the Proposed Development, the study area is appropriate for data collection taking into account the likely zone of influence by hydrological receptors. Beyond these buffer zones, the magnitude of effect will be unable to be accurately assessed as the dilution capacity becomes greater as the hydraulic catchment increases downstream of the Proposed Development. The buffers have also been chosen to identify any existing receptors, assets or infrastructure that have the potential to be affected by temporary flood risk as a result of the construction phase of the Proposed Development.

3.4.6 Where data was requested from third parties, the desk study requested data for an area of 1 km around the Onshore Infrastructure Area at the time of the data request. The 1 km buffer was included to take account of interests or constraints that may occur adjacent or close to the Onshore Infrastructure Area and to allow for evolution of the boundary.

3.4.7 As a result of the iterative site selection process, the Order Limits used to inform this ES varies in some places from the previous boundary used to inform the desk study. All elements where construction, operation and maintenance, and decommissioning activity will occur (i.e., all parts of the Onshore Infrastructure Area, as described in Volume 1, Chapter 3: Project Description of the ES) fall within the area used for the desk study and, therefore, sufficient data has been collated to inform this ES.

3.4.8 The study area is presented within Volume 2, Figure 3.1 of the ES.

3.5 Scope of the Assessment

3.5.1 The scope of this ES has been developed in consultation with relevant statutory and non-statutory consultees as detailed in **Table 3.5** and **Table 3.6**. Taking into account the scoping and consultation process, **Table 3.7** summarises the impacts considered as part of this assessment.

Table 3.7: Impacts considered within this assessment

Impacts scoped into the assessment	Activity
Construction Phase	
The impact of contaminated runoff on the quality of ordinary watercourses, Main Rivers and ground receptors arising from the construction of the onshore elements of the Proposed Development.	Activities required to facilitate the construction of the onshore elements of the Proposed Development (e.g. removal of surface vegetation, excavations, dewatering, stockpiling) may generate contaminated runoff. Accidental spills/contaminant release could also occur as a result of activities. These activities could impact the chemical and biological status of ordinary watercourses and Main Rivers and ground receptors.
The impact of increased flood risk arising from additional surface water runoff during construction of the onshore elements of the Proposed Development.	Activities required to facilitate the construction of the onshore elements of the Proposed Development (e.g. temporary construction compounds, removal of surface vegetation, compaction of soils, excavations, dewatering) may alter drainage patterns and surface water runoff rates onsite, increasing the risk of flooding posed to the surrounding area.
The impact of increased flood risk arising from damage to existing flood defences during the construction of the onshore elements of the Proposed Development.	If the onshore elements of the Proposed Development are located within or near existing formal and informal flood defences, activities required to facilitate construction of the onshore elements of the Proposed Development may impact the integrity (or efficacy) of flood defence infrastructure and therefore increase the risk of flooding within the site and surrounding area.
The impact of increased flood risk arising from watercourse crossings during the construction of the onshore elements of the Proposed Development.	Temporary haul roads serving the onshore cable corridor will require the construction of temporary and permanent crossings over an Environment Agency Main Rivers and several ordinary watercourses. Inappropriate design of these crossings can increase flood risk and result in hydrogeomorphological changes to watercourses.
The impact of damage to existing field drainage during the construction of the onshore elements of the Proposed Development.	If the onshore elements of the Proposed Development are located on or near existing drainage infrastructure, activities required to facilitate the construction of the onshore elements of the Proposed Development may damage field drainage.
The impact of damage to existing water supply and drainage infrastructure during the construction and decommissioning	If the onshore elements of the Proposed Development are located on or near existing water supply and drainage infrastructure, activities required to facilitate the construction of the onshore elements of the

of the onshore elements of the Proposed Development.	Proposed Development may damage existing pipelines, interrupting the local water supply.
Operation and Maintenance	
The impact of increased flood risk arising from additional surface water runoff during operation of the Converter Site.	The installation of the Converter Site would result in additional impermeable land, which may alter drainage patterns and surface water runoff rates onsite, increasing the risk of flooding within the site and the surrounding area.
Decommissioning Phase	
The impact of contaminated runoff on the quality of ordinary watercourses, Main Rivers and ground receptors arising from decommissioning of the onshore elements of the Proposed Development.	Activities required to facilitate the decommissioning of the onshore elements of the Proposed Development (e.g. removal of surface vegetation, excavations, dewatering, stockpiling) may generate contaminated runoff. Accidental spills/contaminant release could also occur as a result of activities. These activities could impact the chemical and biological status of ordinary watercourses and Main Rivers and ground receptors.
The impact of increased flood risk arising from additional surface water runoff during decommissioning of the onshore elements of the Proposed Development.	Activities required to facilitate the decommissioning of the onshore elements of the Proposed Development (e.g. temporary construction compounds, removal of surface vegetation, compaction of soils, excavations, dewatering) may alter drainage patterns and surface water runoff rates onsite, increasing the risk of flooding posed to the surrounding area.
The impact of increased flood risk arising from damage to existing flood defences during decommissioning of the onshore elements of the Proposed Development.	If onshore elements of the Proposed Development are located within or near existing formal and informal flood defences, activities required to facilitate decommissioning of the onshore elements of the Proposed Development may impact the integrity (or efficacy) of flood defence infrastructure and increase the risk of flooding within the site and the surrounding area.
The impact of increased flood risk arising from watercourse crossings during the construction and decommissioning of the onshore elements of the Proposed Development.	Temporary haul roads to facilitate the construction and decommissioning of the Proposed Development may require the construction of temporary and permanent crossings over ordinary watercourses. Inappropriate design of these crossings can increase flood risk and result in hydrogeomorphological changes to watercourses.
The impact of damage to existing field drainage during decommissioning of the onshore elements of the Proposed Development.	If onshore elements of the Proposed Development are located on or near existing drainage infrastructure, activities required to facilitate decommissioning of the Onshore HVDC Cable Corridor may damage field drainage.
The impact of damage to existing water supply and drainage infrastructure during decommissioning of onshore elements of the Proposed Development.	If onshore elements of the Proposed Development are located on or near existing water supply and drainage infrastructure, activities required to facilitate decommissioning may damage existing pipelines, interrupting the local water supply.

3.5.2 Impacts that are not likely to result in significant effects have been scoped out of the assessment. A summary of the impacts scoped out, together with justification for scoping them out and whether the approach has been agreed with key stakeholders through either scoping or consultation, is presented in **Table 3.8**.

Table 3.8: Issues scoped out of the assessment

Impact	Justification
Operation and Maintenance	

The impact of contaminated runoff on surface water and groundwater receptors during the operation and maintenance arising from the onshore elements of the Proposed Development.	Activities associated with the operation and maintenance of onshore elements of the Proposed Development are unlikely to generate contaminated runoff. The drainage strategy for the Converter Site will include measures such as a surface water treatment train in which to treat any pollution or contamination arising on-site. Therefore, the potential impact of contaminated runoff on the quality of surface water receptors during the operation and maintenance of the onshore elements of the Proposed Development is unlikely to be significant and is proposed to be scoped out of the assessment.
The impact of increased flood risk arising from additional surface water runoff during the operation and maintenance from the Onshore HVDC Cable Corridor and HVAC Cables	The installation of the Onshore HVDC Cable Corridor and HVAC Cable Corridors will result in a minor increase in the total area of impermeable land from new link boxes. However, the increase in impermeable land is unlikely to result in a notable change in drainage patterns and surface water runoff rates. Therefore, the potential impact of flood risk arising from additional surface water runoff during the operation and maintenance of the Onshore HVDC Cable Corridor and HVAC Cable Corridors is unlikely to be significant and is proposed to be scoped out of the assessment.
The impact of increased flood risk arising from damage to existing flood defences during the operation and maintenance of the onshore elements of the Proposed Development.	Activities required to facilitate the operation and maintenance of the onshore elements of the Proposed Development are unlikely to impact the integrity (or efficacy) of existing flood defences. Therefore, the potential impact of increased flood risk arising from damage to existing flood defence infrastructure during the operation and maintenance of the onshore elements of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the assessment for hydrology and flood risk.
The impact of increased flood risk arising from watercourse crossings during the operation and maintenance of the onshore elements of the Proposed Development.	Temporary haul roads serving the Onshore HVDC Cable Corridor will be decommissioned at the end of the construction period, with watercourses and adjacent land reinstated prior to the operation and maintenance stage. Therefore, the potential impact of increased flood risk from watercourse crossings during the operation and maintenance of the onshore elements of the Proposed Development has been scoped out of the assessment for hydrology and flood risk.
The impact of damage to existing field drainage during the operation and maintenance of the onshore elements of the Proposed Development	Activities that could damage existing field drainage are to take place during construction and decommissioning phases only. As such it is unlikely that damage would be caused to field drainage during operation. Therefore, the potential impact of damage to field drainage during operation and maintenance of the onshore elements of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the assessment.
The impact of damage to existing water supply and drainage infrastructure during the operation and maintenance of the onshore elements of the Proposed Development	Activities that could damage existing water supply and drainage infrastructure are to take place during construction and decommissioning phases only. As such it is unlikely that damage would be caused to water supply and drainage infrastructure during operation. Therefore, the potential impact of damage to water supply and drainage infrastructure during operation and maintenance of the onshore elements of the Proposed Development is unlikely to result in significant effects and is proposed to be scoped out of the assessment.

3.6 Methodology

Methodology for Baseline Studies

Desk Studies

Flood Risk Assessment

3.6.1 The converter stations for the Proposed Development will each cover an area of over a hectare. Therefore, in accordance with the guidance in the NPPF, PPG ID7 and NPS EN-1, a site-specific FRA has been undertaken for the Proposed Development. This is included in Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.

3.6.2 The key components of the FRA are:

- a review of publicly available EA data, local flood management plans and future flood management schemes;
- a review of relevant Strategic FRAs;
- an assessment of the flood risk in relation to the existing conditions and future baseline conditions; and
- a site-specific assessment of flood risk for the Proposed Development.

3.6.3 The Landfall and Onshore HVDC Cable Corridor will pass through areas designated as Flood Zones 2 and 3. However, impacts associated with the cable routes will be temporary, arising as a result of cable installation. Following installation, land will be reinstated to its former use so the only permanent elements along the cable routes will be link box covers. Therefore, there is no potential for significant operational runoff associated with the Onshore HVDC Cable Corridor.

3.6.4 Therefore, the FRA focuses on temporary impacts associated with the construction of the Landfall, Onshore HVDC Cable Corridor, HVAC Cable Corridors and temporary and permanent impacts for the Converter Site.

Water Framework Directive

3.6.5 A WFD assessment has been undertaken for the onshore elements of the Proposed Development (see Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES). The assessment is based on guidance developed by the EA and Planning Inspectorate and is undertaken in a staged approach to ensure that those components of the Proposed Development and the associated activities are assessed in the context of the quality elements that contribute to overall WFD status.

3.6.6 The key focus of the assessment is to ensure that the Landfall and onshore elements of the Proposed Development do not result in a deterioration in the current WFD status based on the 2019 baseline as reported in the South West River Basin Management Plan 2022-2027 and also to ensure that the project does not compromise the achievement of the WFD objectives for the improvement in the overall status of the water bodies which could be affected. The assessment also considers the protected areas linked to the water bodies in question and ensures that the protected area objectives are also unaffected.

3.6.7 The scoping stage of the WFD compliance assessment has concluded that there were a number of components and activities associated with Landfall and onshore elements of the Proposed Development that represented a risk to the WFD status and objectives and therefore were scoped into the assessment. The relevant quality elements contributing to the overall status were considered and how each potential impact could affect these.

3.6.8 The impact assessment stage has examined the potential residual impact on water bodies (including cumulative impacts), suggesting further mitigation measures and enhancements where appropriate. The detailed assessment is provided within Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment of the ES.

Abstraction Licences, Pollution Incidents and Discharge consents report

3.6.9 The abstraction licences, pollution incidents and discharge consents report is presented within Volume 2, Appendix 3.3: Surface Water Abstraction Licences, Discharge Consents and Pollution Incidents of the ES. The report provides information as to how surface water courses within the study area are utilised, how these watercourses may be affected by pollution and how discharges to surface watercourses may affect the baseline quality of the receiving watercourses.

Site-Specific Surveys

3.6.10 A hydrology and flood risk site walkover of the Onshore HVDC Cable Corridor, HVAC Cable Corridors and Converter Site was undertaken in March 2023. For more information, please see section 1.5 of Volume 2, Appendix 3.1: Flood Risk Assessment of the ES.

Impact Assessment Methodology

Overview

3.6.11 The approach to determining the significance of effects is a two-stage process that involves defining the magnitude of the impact and the sensitivity of the receptor. This section describes the criteria applied in this chapter to assign values to the magnitude of impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on relevant guidance, including the Design Manual for Roads and Bridges (DMRB) methodology (Highways England et al., 2020) where appropriate as described in further detail in Volume 1, Chapter 5: EIA Methodology of the ES.

3.6.12 The hydrology and flood risk impact assessment has followed the methodology set out in Volume 1, Chapter 5: EIA Methodology of the ES. Specific to the hydrology and flood risk impact assessment, the following guidance documents have also been considered:

- National Highways *et al*., (2020) Design Manual for Roads and Bridges (DMRB) LA113 Road drainage and the water environment; and
- National Highways *et al*., (2020) Design Manual for Roads and Bridges (DMRB) LA104 Environmental assessment and monitoring.

Receptor Sensitivity/Value

3.6.13 The criteria for defining sensitivity in this chapter are outlined in **Table 3.9**.

Table 3.9: Sensitivity criteria

Sensitivity	Definition
Very High	Receptor with little to no capacity to accommodate change, is high value or critical importance to the local, regional or national economy. Receptor is highly vulnerable to impacts that may arise from the development and recoverability is long term or not possible. **Surface Water**: WFD current overall status of high. The surface water body supports sensitive aquatic ecological receptors and is extensively used for public water supply and large-scale agricultural use. **Groundwater**: Groundwater body supports public and/or large-scale industrial water supply and/or is a principal aquifer. **Flood Risk**: Land within Flood Zone 3 or more than one hundred residential properties protected from flooding by flood defence infrastructure or by natural floodplain storage.
High	Receptor with a low capacity to accommodate change, is of moderate value with reasonable contribution to the local, regional or national economy. Receptor is generally vulnerable to impacts that may arise from the development and recoverability is low and/or costly. **Surface Water**: WFD current overall status of good. Surface water body may support sensitive aquatic ecological receptors and is used is used for public water supply/medium scale industrial or agricultural use. **Groundwater**: Groundwater body supports public water and/or large-scale industrial water supply and/or is a principal or secondary A aquifer. **Flood Risk**: Land within Flood Zone 3 and/or 2 or between one and one hundred residential properties or industrial premises protected from flooding by flood defence infrastructure or by natural floodplain storage.
Medium	Receptors with a moderate capacity to accommodate change, is of minor value with small levels of contribution to the local, regional and national economy. Receptor is somewhat vulnerable to impacts that may arise from the development and has moderate to high levels of recoverability. **Surface Water**: WFD current overall status of moderate. The surface water features may be locally important for spawning of salmonid species. Surface water body is used for private water supply or small scale industrial/agricultural use. **Groundwater**: Secondary A aquifer and/or a groundwater body which supports private water supply or medium scale agricultural/industrial abstractions. **Flood Risk**: Flood plain within Flood Zone 2 and/or 1 or limited constraints and a low probability of flooding of residential and industrial properties.
Low	Receptor with a high capacity to accommodate change, is of low value with little contribution to the local, regional or national economy. Receptor is not generally vulnerable to impacts that may arise from the development and/or has high recoverability. **Surface Water**: WFD current overall status of poor. Surface water bodies are not significant in terms of sensitive ecological receptors or fish spawning. Small scale (single residential or commercial use) abstraction licences are present in close proximity. **Groundwater**: Secondary undifferentiated strata with no abstraction licences. **Flood Risk**: Flood plain within Flood Zone 2 and/or located outside floodplain within Flood Zone 1 or limited constraints and a very low probability of flooding of residential and industrial properties.
Negligible	Receptor with a very high capacity to accommodate change, is of negligible value with no contribution to local, regional or national economy. Receptor is not

	vulnerable to impacts that may arise from the development and/or has high recoverability. **Surface Water**: WFD current overall status of bad. No sensitive ecological receptors or fish spawning are present within the surface water bodies. No abstraction licences present within the area. **Groundwater**: Unproductive strata with no abstraction licences. **Flood Risk**: Area outside flood plain (Flood Zone 1) or flood plain with very low probability of flooding industrial properties.

Magnitude of Impact

3.6.14 The criteria for defining magnitude in this chapter are outlined in **Table 3.10**.

Table 3.10: Impact magnitude criteria

Magnitude of impact		Definition
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement or resource quality; extensive restoration or enhancement; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability, minor loss or, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to, or positive addition of one or more characteristics, features or elements.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

3.6.15 In determining impact magnitude, the impact duration and the nature of the impact has been taken into account. The following definitions from the DMRB (LA104 and LA113) have been used in the assessment.

- Temporal scale.
  - Short Term: A period of months, up to one year.
  - Medium Term: A period of more than one year, up to five years.
  - Long Term: A period of greater than five years.
- Geographical scale: whether the effect would be experienced at the local, regional, or national level.
- Adverse or Beneficial: whether the nature of the effect increases or decreases potential contamination risks to sensitive receptors.

- Temporary: effects that persist for a limited period only (due for example, to particular activities taking place for a short period of time).
- Permanent: effects that result from an irreversible change to the baseline environment (e.g., land-take) or which persist for the foreseeable future.
- Reversible/irreversible effect: effects can be reversed by mitigation measures or by natural environmental recovery within reasonable timescales (e.g., 5 to 10 years following cessation of construction).

Significance of Effect

3.6.16 The significance of the effect upon hydrology and flood risk has been determined by taking into account the sensitivity of the receptor and the magnitude of the impact. The method employed for this assessment is presented in **Table 3.11**. Where a range of significance levels is presented, the final assessment for each effect is based upon expert judgement.

3.6.17 In all cases, the evaluation of receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgement and is underpinned by narrative to explain the conclusions reached.

3.6.18 For the purpose of this assessment, any effects with a significance level of minor or less are not considered to be significant in terms of the EIA Regulations.

Table 3.11: Assessment Matrix

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major
Very High	Minor	Moderate or Major	Major	Major

3.6.19 Where the magnitude of impact is 'no change', no effect would arise.

3.6.20 The definitions for significance of effect levels are described as follows.

- Major: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category. Effects upon human receptors may also be attributed this level of significance.
- Moderate: These beneficial or adverse effects have the potential to be important and may influence the key decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor.
- Minor: These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.

- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.
- No change: No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Assumptions and Limitations of the Assessment

3.6.21 The assessment within this chapter is based on publicly available data obtained from the EA, Torridge District Council, Devon County Council, the Groundsure Insights report, as well as additional information supplied from stakeholders during the scoping and consultation stages.

3.6.22 The information has been supplemented with publicly available desktop reports as presented within **Table 3.12**, Groundsure searches and public consultation such that it is considered sufficient to characterise the baseline environment.

3.6.23 Whilst asset plans from South West Water have been obtained, discussions with South West Water and other service companies will be undertaken at the detailed design stage to confirm the location of local services.

3.6.24 It is also noted that the EA flood zone mapping does not take into account the impact of local flood defences or climate change upon flooding, and does not provide information on flood depth, speed, or volume of flow. The maps do not show flooding from other sources such as groundwater, direct runoff from fields or overflowing sewers. However, a description of these sources of flooding is provided in the FRA (see Volume 2, Appendix 3.1: Flood Risk Assessment of the ES) such that sufficient baseline information is available.

3.6.25 The assessment is limited by a lack of detailed information regarding:

- flow data for watercourses; and
- water quality data for specific locations.

3.6.26 However this is not a major concern as aside from the River Torridge, ordinary watercourse catchments within the study area predominantly respond to rainfall events, and flooding from this source is assessed using EA Long Term Flood Risk mapping from surface water which provides depth and flow data within ordinary watercourses as a result of a range of modelled rainfall scenarios.

3.6.27 Notwithstanding the above, overall a moderate to high level of certainty has been applied to the baseline and assessment presented in this chapter. Where available, catchment data regarding water quality has been used to inform the assessment. The information available is considered sufficient to establish the baseline within the study area, therefore, there are no data limitations that would affect the conclusions of this assessment.

3.7 Baseline Environment

Desk Study

3.7.1 Information on hydrology and flood risk within the study area was collected through a detailed review of existing studies and datasets. These are summarised in **Table 3.12**.

Table 3.12: Summary of desk study sources used

Title	Source	Year	Author
1:25,000 mapping	https://www.bing.com/maps	2023	Ordnance Survey (OS)
Catchment Data Explorer	https://environment.data.gov.uk/catchment-planning/	2023	EA
Climate Change Allowances for Rainfall	https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall	2023	(Department for Environment Food and Rural Affairs) DEFRA
Climate Change Allowances for Peak River Flow	https://environment.data.gov.uk/hydrology/climate-change-allowances/river-flow	2023	DEFRA
Groundsure Insights digital reports	Document references • GSIP-2022-12875-10942_1a • GSIP-2022-12875-10942_1b • GSIP-2022-12875-10942_1c	2022	Groundsure
Flood Estimation Handbook (FEH) Webservice	https://fehweb.ceh.ac.uk/GB/map	2023	FEH
Flood Map for Planning	https://flood-map-for-planning.service.gov.uk/	2023	EA
Geoindex Onshore Viewer	https://mapapps2.bgs.ac.uk/geoindex/home.html	2023	British Geological Survey (BGS)
Internal Drainage Boards Map	https://www.ada.org.uk/idb-map/	2023	Association of Drainage Authorities (ADA)
Long Term Flood Risk Mapping	https://check-long-term-flood-risk.service.gov.uk/map	2023	EA
Multi-Agency Geographic Information for the Countryside (MAGIC) mapping	https://magic.defra.gov.uk	2023	DEFRA
North Devon and Somerset Shoreline Management Plan	https://southwest.coastalmonitoring.org/Proposed Developments/shoreline-management-plans/ndascag-smp2/	2010	North Devon and Somerset Coastal Advisory Group
North Devon and Torridge Local Plan 2011 - 2031	https://consult.torridge.gov.uk/kse/event/33615/section/	2011	North Devon Council, Torridge District Council
NPPF	https://www.gov.uk/government/publications/national-planning-policy-framework--2	2023	Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (DLPHC and MHCLG)
NPS for Energy EN-1	https://www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure	2024	DESNZ
PPG	https://www.gov.uk/guidance/flood-risk-and-coastal-change	2023	DLPHC and MHCLG
Shoreline Management Plan Policy Designations	https://southwest.coastalmonitoring.org/Proposed Developments/shoreline-management-plans/	2023	South West Coastal Monitoring

Soilscapes Viewer	http://www.landis.org.uk/soilscapes/	2023	The National Soils Research Institute
Strategic Flood Risk Assessment (SFRA) – Level 1 and 2	https://www.torridge.gov.uk/article/11269/Strategic-Flood-Risk-Assessment-SFRA-Level-1-and-2	2009	Torridge District Council
Surface Water Management Plan	https://consult.torridge.gov.uk/file/3369625	2012	Devon County Council

Site Visit

3.7.2 A site walkover was undertaken on 22 March 2023. The walkover traversed the Onshore HVDC Cable Corridor from the Landfall to the Converter Site to note hydrological conditions and watercourses within the study area and is discussed in greater detail within section 1.5 and 1.6 of the Flood Risk Assessment (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES).

3.7.3 The walkover also recorded PWS within the study area. Further information on PWS is presented within **section 3.7.60**.

Designated Sites

Designations

3.7.4 A full description of the designated sites within the study area is presented within Volume 2, Chapter 1: Onshore Ecology and Nature Conservation of the ES. A summary of the key elements relevant to this chapter are set out in **Table 3.13** below and presented within Figure 3.6 (see Volume 2, Figures).

Table 3.13: Designated sites

Designated Site	Distance to the Proposed Development Site	Relevant Qualifying Interest
Mermaid's Pool to Rowden Gut Geological SSSI	The Landfall of the Proposed Development crosses the designated site.	The designated coastal section exposes the only complete sequence available through the Bideford Formation – a localised development of fluvio-lacustrine 'Coal Measure' type deposits.
Taw-Torridge Estuary SSSI 1,000 m impact zone	The 250 m buffer zone of the Onshore Infrastructure Area is located within the 1,000 m impact zone.	The Taw-Torridge Estuary is of major importance for its overwintering and migratory populations of wading birds. In addition, rare plants grow along its shores.

Nitrate Vulnerable Zones

3.7.5 Nitrate Vulnerable Zones (NVZs) are areas designated as being at risk from agricultural nitrate pollution. The study area is located within two NVZs as presented within **Table 3.14** below and within Figure 3.6 (see Volume 2, Figures).

Table 3.14: Nitrate Vulnerable Zones

NVZ name	Type and status of NVZ	Reference
Jennetts reservoir Eutrophic lake	Eutrophic water (existing)	EL118
Taw Estuary	Eutrophic water (existing)	EL06
Gammaton Lower Reservoir Eutrophic lake	Eutrophic water (existing)	EL122

Drinking Water Protected Areas

3.7.6 Drinking Water Protected Areas (Surface Water) are defined by the Water Environment (Water Framework Directive) (England & Wales) Regulations 2017 as locations where over water is abstracted for human consumption (either over 10m^3 per day or serving more than 50 persons) or is intended for such future use.

3.7.7 The Gammaton Lower Reservoir (ID GB30844781) and Gammaton Upper Reservoir (ID GB30844798) were classified as Drinking Water Protected Areas at the time of undertaking the PEIR, which was published in May 2024. The Environment Agency have since proposed to remove the two reservoirs from the classification due to no qualifying abstractions from the waterbody (Environment Agency, 2024a).

Topography

3.7.8 Using OS 1:25,000 mapping, the shingle bar at Cornborough Range is shown to rise above sea level to approximately 15 mAOD (meters Above Ordnance Datum) immediately landward of Mean High Water. Ground levels generally rise as the Onshore HVDC Cable Corridor routes around Bideford, reaching approximately 100 mAOD to the south of the A39. Levels fall in proximity to the River Torridge to approximately 5 mAOD and rise again to approximately 125 mAOD within the easternmost extents of the Onshore HVDC Cable Corridor. The proposed converter stations and HVAC Cables are located approximately between 120 and 144 mAOD.

Hydrological Setting

3.7.9 Main rivers designated by the EA are shown on the Main River Map. The EA undertakes maintenance and improvement activities on Main Rivers and also activities relating to managing flood risk. Non designated watercourses are referred to as 'ordinary watercourses' and LLFAs and Internal Drainage Boards carry out flood risk management work for these watercourses.

Sea

3.7.10 The Landfall is located to the south west of Cornborough, at Cornborough Range. This location comprises a natural and wide, substantially dry valley with a natural shingle bar with Bideford Bay beyond.

Shoreline Management Plan

3.7.11 Shoreline Management Plans (SMPs) set out the strategic approach to managing the coastline over a short, medium and long temporal scale.

3.7.12 The study area is located within the Shoreline Management Plan 2 North Devon and Somerset. The Landfall is located within sub cell 7C05 'Hartland Point to Westward Ho!' and the Onshore HVDC Cable Corridor crosses sub cell 7C12 'Taw/Torridge Estuary'. Management approaches within the cell are included below in **Table 3.15.**

Table 3.15: SMP Management Approaches

Policy unit	Policy name	Policy and approach		
		2005 – 2025	2025 – 2055	2055 – 2105
7C05	Clovelly to Westward Ho!	No Active Intervention – Local Activity Only	No Active Intervention – Local Activity Only	No Active Intervention – Local Activity Only
7C12	Taw/Torridge Estuary	No Active Intervention – Local Activity Only	No Active Intervention – Local Activity Only	No Active Intervention – Local Activity Only

3.7.13 Both subcells in **Table 3.15** are classified to have no active intervention; a decision not to invest in providing or maintaining defences due to the lack of requirement to protect property and infrastructure.

Main Rivers

3.7.14 A review of published OS maps and EA data shows the River Torridge, a designated Main River bisects the central extent of the study area and is presented within Figure 3.2 (see Volume 2, Figures). The river discharges to the Taw and Torridge Estuary prior to discharging to Barnstaple Bay, where the Landfall site is located.

3.7.15 The River Torridge is considered tidally influenced, with the tidal limit located at Weare Gifford, upstream of the study area.

Ordinary Watercourses

3.7.16 OS Mapping indicates the following ordinary watercourses are also present within the study area:

- River Yeo;
- Kenwith Stream;
- a small ordinary watercourse upon the cliffs at Cornborough Range at Landfall, intermittently flowing directly to Bideford Bay; and
- several tributaries of Jennetts Reservoir and its associated outflow.

3.7.17 OS Mapping indicates that there are two ordinary watercourses that commence immediately adjacent to the western boundary of the Converter Site. The watercourses are unnamed and converge to the south of the southern boundary of the Converter Site and flow in a southerly direction, towards Huntshaw Water, an ordinary watercourse which in turn outfalls to the River Torridge.

3.7.18 The majority of ordinary watercourses within the study area form tributaries of the River Torridge. Ordinary watercourses present in closest proximity to the coast outfall directly to Barnstaple Bay.

3.7.19 The location of ordinary watercourses are presented within Figure 3.2 (see Volume 2, Figures).

Other Hydrological Features

3.7.20 Jennetts Reservoir and the Gammaton Reservoirs are 195 m and 140 m to the north of the Onshore Infrastructure Area. Bideford and District Angling Club Lake is located 9 m to the north and west of the Onshore Infrastructure Area. An unnamed pond is also located 1.0 km south of the Onshore Infrastructure Area to the east of the River Torridge. These features are presented within Figure 3.2 (see Volume 2, Figures).

3.7.21 Jennetts Reservoirs discharges to the River Torridge. Gammaton Reservoirs discharge to Horwood Stream which in turn outfalls to the River Torridge.

Internal Drainage Board

3.7.22 The study area is not located within an Internal Drainage Board and therefore no further assessment is required.

Water Framework Directive Classification

3.7.23 The EA catchment data explorer mapping indicates water body catchments within the study area are located within wider North Devon and South West TraC Management Catchments. The majority of the Onshore Infrastructure Area is located within the Torridge Operational Catchment, and predominantly discharges to the River Torridge.

3.7.24 The Joint Nature Conservation Committee (JNCC) WFD guidance (JNCC, 2023) indicates that water bodies below 10 km^2 catchment area no longer need to be included in a water body's classification assessment. For watercourses that are too small to be classified as WFD water bodies, there is no further data available. Therefore, for these watercourses, a classification was derived from their associated downstream water bodies. In this instance, water bodies under 10 km^2 within proximity to the River Torridge are classified by the Taw/Torridge transitional water body, and catchments that outfall directly to Barnstaple Bay are classified by the Barnstaple Bay coastal water body.

3.7.25 For surface waters, the WFD objectives are based on the ecological and chemical status of the water body (i.e., the predicted overall objective if technically feasible measures are implemented). These measures are required to prevent deterioration in the current classification of the water body and produce more benefits than they cost to implement once they have been implemented. The date to achieve the predicted overall objective is determined by the type of measures which are needed in order to improve the status of the water body (i.e., the cost of the measures (are they affordable) and the time taken for the status to improve once the measures have been implemented). For further information, see Volume 2, Appendix 3.2: Onshore Water Framework Directive Assessment.

3.7.26 The study area includes nine surface water WFD catchments and one groundwater WFD catchment, details of which are provided in **Table 3.16**. Catchments are presented within Figure 3.3 (see Volume 2, Figures).

Table 3.16: WFD water body classifications

Name of water body	Water body type	Classification (2022)	Overall objective
Kenwith Stream (ID: GB108050014500)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Horwood Stream (ID GB108050014510)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Upper River Yeo (Bideford)	River (not designated artificial or heavily modified)	Ecological – Poor Chemistry – Does not require assessment Overall – Poor	Good by 2027
Lower River Yeo (Bideford)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Huntshaw Water (GB108050014440)	River (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Gammaton Upper Reservoir (GB30844798)	Lake (heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Gammaton Lower Reservoir (GB30844781)	Lake (heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Taw / Torridge (GB540805015500)	Transitional Water (heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Barnstaple Bay (GB610807680003)	Coastal Water (not designated artificial or heavily modified)	Ecological – Moderate Chemistry – Does not require assessment Overall – Moderate	Good by 2027
Torridge and Hartland Streams (ID GB40802G800600)	Groundwater (Natural)	Quant – Good Chemistry – Poor Overall – Poor	Good by 2027

Geological and Hydrogeological Setting

3.7.27 A full description of the geological and hydrogeological setting is presented within Volume 2, Chapter 4: Geology, Hydrogeology and Ground Conditions of the ES. A summary of the key elements relevant to this chapter are set out in the below.

Bedrock Geology

3.7.28 BGS Geoindex Onshore mapping (1:50,000 scale) indicates that the study area is situated on a variety of intermittent bedrock geology, consisting of the following:

- Bude Formation – Sandstone;
- Bude Formation – Mudstone and Siltstone;
- Crackington Formation – Mudstone and siltstone; and
- Bideford Formation – Sandstone.

3.7.29 The BGS borehole logs indicated that there were no boreholes records along the Onshore HVDC Cable Corridor.

3.7.30 Bedrock geology is presented within Figure 3.4 (see Volume 2, Figures).

Superficial Deposits

3.7.31 BGS Geoindex Onshore mapping (1:50,000 scale) indicates that the study area is underlain by Superficial Deposits – River Torridge Terrace Deposits, 1 member (gravel, sand and silt) is only present around the banks of the River Torridge, at the location where the Onshore HVDC Cable Corridor crosses this section.

3.7.32 Superficial deposits are presented within Figure 3.5 (see Volume 2, Figures).

Aquifer Designation

3.7.33 The EA's Aquifer Designation Mapping indicates the strata at the surface of the study area is classified as a Secondary A Aquifer. These formations are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers.

Source Protection Zones

3.7.34 EA online groundwater Source Protection Zone mapping indicates that the study area is not located within a groundwater Source Protection Zone.

Groundwater Body Status

3.7.35 **Table 3.17** lists the groundwater catchments within the study area, associated WFD classification grade and overall objectives. For further information, see Volume 2 Appendix 3.2: Onshore Water Framework Directive Assessment.

Table 3.17: WFD Groundwater quality data

Name of water body	Water body type	Classification (2022)	Overall objective
Torridge and Hartland Streams (ID GB40802G800600)	Groundwater (Natural)	Quant – Good Chemistry – Poor Overall – Poor	Good by 2027

Flood Risk

EA Flood Zones

3.7.36 The EA Flood Zones refer to the probability of flooding from rivers and sea in a given year, assuming no defences are in place. The mapping does not account for climate change. Flood zone definitions are presented below within **Table 3.18**.

Table 3.18: Flood Map for Planning Flood Zones.

Flood zone	Flood zone definitions
Flood Zone 1	Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
Flood Zone 2	Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
Flood Zone 3	Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

3.7.37 The Flood Map for Planning (EA, 2023) is presented within Figure 3.7 (see Volume 2, Figures) and indicates the Onshore Infrastructure Area is located within Flood Zones 1, 2 and 3. Flood Zones are discussed in greater detail within Flood Risk Assessment (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES).

Environment Agency Flood Model Data

3.7.38 To inform flood risk to the Onshore Infrastructure Area, we have requested Product 4, 5, 6 and 8 data from the EA Partnership and Strategic Overview Team (East) (FOI/EIR Ref: 346828 and 340734) under an Open Government Licence. This included the following datasets:

- Coastal Design Sea Levels - Coastal Flood Boundary Extreme Sea Levels (2018),
- Weare Gifford model (2019);
- Devon Tidal Flood Zone Improvements model (2012), and
- JFLOW (2007).

Landfall

3.7.39 Flood risk at Landfall was ascertained using the 'Coastal Design Sea Levels – Coastal Flood Boundary Extreme Sea Levels (2018)' dataset.

3.7.40 Based on the upper end allowance projected sea level rise, due to the distance in land and level of the Landfall, it will remain within Flood Zone 1 with a low risk of tidal and fluvial flooding during the lifetime of the Project.

Onshore HVDC and HVAC Cable Corridors

3.7.41 The installation of below ground cables associated with the Onshore HVDC Cable Corridor and HVAC Cable Corridors will be temporary in nature; with construction programmed to be completed by 2033. The installation of onshore HVDC and HVAC Cables will not result in any permanent above ground structures proposed other than link box covers.

3.7.42 Flood risk along the Onshore HVDC Cable Corridor and HVAC Cable Corridors was ascertained using the 2007 JFLOW Model, the 2012 Devon Hydrology Strategy and 2019 Weare Gifford Model and the Long Term Flood Risk from Surface Water Flooding mapping.

3.7.43 The majority of the Onshore HVDC Cable Corridor and entirety of the HVAC Cable Corridors and associated 250 m study area is located within Flood Zone 1 and is not located within the undefended or defended flood extents of supplied models, including the climate change extents. As such, the majority of the Proposed Development is not considered to be at risk from increases to peak river flow as a result of climate change.

3.7.44 The only areas along the Onshore HVDC Cable Corridor located within Flood Zone 2 and 3 are where development crosses watercourses. A detailed analysis of flood risk has been made at these crossing locations, as well as analysis regarding the extents of climate change during the development lifetime within the Onshore HVDC Cable Corridor. A summary is provided below, with further information, including details regarding the Sequential Test and Exception Test, available within **section 1.6** of the Flood Risk Assessment (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES)

3.7.45 Areas of Flood Zone 2 and 3 associated with out of bank flows from watercourses along the Onshore HVDC Cable Corridor are to be crossed by HDD which routes the cable underneath extents of Flood Zone 2 and 3. The HDD entry and exit pits are to be located within temporary construction compounds set back 10 m from the bank of ordinary watercourses and 16 m from the landward toe or flood defences, or 16 m from the top of bank associated with the River Torridge. This will locate the temporary construction compounds outside the flood extents for all available modelled data.

3.7.46 Taking into consideration the above, the Onshore HVDC Cable Corridor and HVAC Cable Corridors are assessed to have a low risk of flooding from fluvial and tidal sources and is not considered to be at risk from increases to peak river flow as a result of climate change.

Converter Site

3.7.47 Flood risk at the Converter Site was ascertained using the 2007 JFLOW Model, the 2012 Devon Hydrology Strategy and 2019 Weare Gifford Model. A summary is provided below, with further information, including details regarding the Sequential Test and Exception Test, available within section 1.5 of the FRA (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES)

3.7.48 The Converter Site and associated 1 km study area is not included within the undefended or defended flood extents of supplied models, including the climate change extents. Due to the distance of the Converter Site from fluvial and tidal sources, the Proposed Development is located within Flood Zone 1 with a low risk of flooding from all sources. The Proposed Development is not considered to be at risk from increases to peak river flow as a result of climate change.

Highways Improvements

3.7.49 Flood risk for the highway improvements have been ascertained using the 2007 JFLOW Model, the 2012 Devon Hydrology Strategy and 2019 Weare Gifford Model. A summary is provided below, with further information, including details regarding the Sequential Test and Exception Test, available within section 1.6 of the FRA (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES).

3.7.50 Highways improvements are proposed to be undertaken during the construction phase. Works at Gammaton Moor are located within Flood Zone 1 and have a low risk of flooding. Highways improvements along the A386 and the Cornborough Sewage Works access road are located within Flood Zone 1, 2 and 3 and have a low risk of flooding, accounting for mitigation measures proposed. All highways improvements are not expected to result in any ground reprofiling, with all works expected to tie into surrounding ground levels.

Flood Defences

3.7.51 Flood defences in the form of naturally high ground and bridge abutments are present along the banks of the River Torridge within the study area. The majority of defences offer up to a 1 in 5-year standard of protection with one extent of naturally high ground offering a 1 in 100-year standard of protection which benefits East-the-Water.

3.7.52 The beach profile at Cornborough Range provides an informal flood defence inland against tidal flooding. There are no formal flood defences along this part of the coast, with much of the coast to either side of the Landfall being higher cliffs. Within the Shoreline Management Plan, the beach is noted to have no active intervention; a decision not to invest in providing or maintaining defences due to the lack of requirement to protect property and infrastructure.

3.7.53 Flood defences are listed within the FRA (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES) and their locations within the study area are presented within Figure 3.7 (see Volume 2, Figures).

Flood Alert and Flood Warnings

3.7.54 The EA monitors rainfall totals, river levels and sea conditions to forecast the probability of flooding and provide tiered warnings for specific areas when a flood event is forecast and/or occurring. Flood warnings are available to emergency responders, media outlets and the general public and provide information regarding flood vulnerability reduction measures to people located within Flood Warning Areas and Flood Alert Areas including evacuation methods.

3.7.55 The EA defines Flood Warning Areas and Flood Alert Areas as where flooding is expected to occur, generally from rivers and sea and where a Flood Warning

Service is provided. Flood warning and flood alert areas located within the study area are presented below within **Table 3.19** and **Table 3.20** and additionally presented within Figure 3.8 (see Volume 2, Figures).

Table 3.19: Flood Warnings

Flood Warning Area Code	Description	Flood source
113FWT2T2A3	Tidal River Torridge from Weare Giffard to Bideford	River Torridge
113FWF2D0C	River Torridge (Lower) from Dolton to Bideford, including Taddiport and Weare Giffard	River Torridge

Table 3.20: Flood Alerts

Flood Alert Area Code	Description	Flood source
113WACT2A	North Devon coast from Hartland Point to Lynmouth	Bristol Channel
113WABTW02	Lower Torridge area	River Torridge, Kenwith Stream

Sewer Infrastructure, Water Supplies, Consents and Pollution Incidents

Sewer Infrastructure

3.7.56 Public sewer infrastructure assets within the study area are served by South West Water. Within a consultation email, received 8 January 2024, it was confirmed there are no sewers within proximity to the Converter Site.

3.7.57 The discharge pipe for treated sewage from the South West Water Cornborough Waste Water Treatment Plant is located within the study area at Landfall. Southern Water sewage treatment works is also located at Whitehall Landcross within the study area.

Groundwater Abstractions

3.7.58 The abstraction licences taken from Groundsure data records identified no active groundwater abstraction within the study area. For further details, refer to Volume 2, Appendix 4.1: Desk Top Study, Preliminary Risk Assessment and Site Reconnaissance of the ES.

Surface Water Abstractions

3.7.59 The abstraction licences taken from Groundsure data records identified one active surface water abstractions within the study area. for further details refer to Volume 2, Appendix 3.3: Surface Water Abstraction Licences, Discharge Consents and Pollution Incidents of the ES.

Private Water Supplies

3.7.60 A PWS questionnaire was undertaken in March 2023. As a result of further data requests, groundwater PWS have been identified within Volume 2 Chapter 4: Geology, Hydrogeology and Ground Conditions of the ES, and a qualitative PWS assessment has been undertaken (Volume 2, Appendix 4.2 Private Water Supply Desk Based Assessment) to assess the potential for PWS to be impacted by the Proposed Development.

Discharge Consents

3.7.61 Discharges of liquid effluent or waste water into surface waters are regulated by the EA using discharge consents and environmental permits. A review of Groundsure data identified 20 active consented discharges to surface waters within the study area. The discharges relate to final/treated effluent from domestic properties. Although the volume and parameters of the discharges are regulated (via the discharge consents and permits), the quality of the receiving surface water may potentially be affected.

3.7.62 The details of the discharge consents and permits are provided within Volume 2, Appendix 3.3: Surface Water Abstraction Licences, Discharge Consents and Pollution Incidents of the ES.

Pollution Incidents

3.7.63 Pollution incident mapping has been used to identify if the quality of watercourses within the study area may have been affected by pollution. A review of Groundsure data identified two significant pollution incidents to water in the study area. For further details refer to Volume 2, Appendix 3.3: Surface Water Abstraction Licences, Discharge Consents and Pollution Incidents of the ES.

Future Baseline Conditions

3.7.64 Schedule 4, paragraph 3 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 require that '*an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge'* is included within the ES. This section provides an outline of the likely future baseline conditions in the absence of the Proposed Development.

3.7.65 An assessment of the future baseline conditions in the absence of the Proposed Development has been carried out and is described within this section.

3.7.66 The main impact on the hydrology and flood risk future baseline is associated with the potential effects of climate change, which may impact on future peak river flow rates, rainfall intensity and sea levels. A summary of potential climate change allowances as outlined by the EA (2022) is presented within the following sections. Further details of climate change allowances can be found within Flood Risk Assessment: Climate Change Allowances (see Volume 2, Appendix 3.1: Flood Risk Assessment of the ES).

3.7.67 The NPPF sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change. The NPPF and supporting planning practice guidance on flood risk and coastal change explain when and how FRAs should be used. This includes demonstrating how flood risk will be managed now and over the Proposed Development's lifetime, taking climate change into account.

Peak River Flow

3.7.68 In May 2022, the EA released its latest climate change allowances, which update the 2020 and 2011 version of Adapting to Climate Change: Advice to Flood and Coastal Risk Management (EA 2022). The EA has used the UKCP18 Projections to update the peak river flow allowances and have based them on management catchments instead of river basin districts.

3.7.69 **Table 3.21** below presents the anticipated increase in peak river flows for the North Devon Management Catchment over coming decades.

Table 3.21: Peak River Flow Allowances by River Basin District

Management Catchment	Allowance Category	Total Potential change anticipated for '2020s' (2015 – 2039)	Total Potential change anticipated for '2050s' (2040 – 2069)	Total potential change anticipated for the '2080s' (2070-2115)
North Devon Management Catchment	Central	13%	19%	38%
	Higher Central	18%	27%	45%
	Upper End	28%	45%	80%

3.7.70 The Proposed Development is classified as 'essential infrastructure' and is expected to be fully commissioned by 2033. The minimum operational lifetime of the development is currently anticipated to be 50 years. As such, during the construction phase, for development within Flood Zone 2 and 3 and additional 18% uplift of river flows calculated by the 2020's Higher Central epoch up until commissioning in 2033 has been applied.

3.7.71 During the operational period, a 45% uplift of river flows calculated by the 2080's Higher Central epoch will be applied to Flood Zone 2 and 3. Permanent above ground infrastructure associated with the Onshore Infrastructure is limited to Flood Zone 1. Due to the distance between this aspect of the Proposed Development and the location of fluvial sources, The Onshore Infrastructure Area is not assessed to become at risk from flooding due to the impacts of climate change on peak river flow during the development lifetime.

3.7.72 To explore the credible maximum scenarios, the Upper End allowance of 80% has been applied to extents of Flood Zone 2 and 3 to the end of the operational period. Due to topographical levels and distance from fluvial sources, permanent above ground development within the Onshore Infrastructure Area will not be impacted by the Upper End allowance. It is expected highways improvements located within Flood Zone 2 and 3 will not be sensitive to increased depths of floodwater inundation associated with an increase in peak river flow.

Peak Rainfall Intensity

3.7.73 Increased rainfall affects surface water flood risk and how drainage systems need to be designed. In May 2022, the EA released revised peak rainfall climate change allowances, to also reflect the management catchment geography. The anticipated increases are provided in **Table 3.22** and demonstrate how peak rainfall allowances are projected to rise over coming decades.

Table 3.22: Change to Extreme Rainfall Intensity compared/annual exceedance events

North Devon Management Catchment	Total Potential change anticipated for '2050s' (up to 2060)	Total potential change anticipated for the '2070s' (2062-2125)
Central Estimate	25%	30%
Upper Estimate	45%	50%

3.7.74 Runoff and attenuation calculations should take into account the above allowance for climate change, which is determined by the lifetime of the development as follows.

- Developments with a lifetime beyond 2100 must assess the upper end allowance for the 2070s epoch. The development should be designed so that there is no increased flood risk elsewhere and the development is safe from surface water flooding for the upper end allowance in the 1% Annual Exceedance Probability rainfall event.
- Developments with a lifetime between 2061 and 2100 should consider the central allowance for the 2070s epoch.
- Developments with a lifetime up to 2060 should consider for the central allowance for the 2050s epoch.

3.7.75 The operation of the proposed converter stations have an anticipated minimum operational lifetime of 50 years. It is likely that this operational lifetime could be extended through refurbishment and the replacement of equipment, rather than decommissioning. Therefore, the 2070s central estimate (for developments with a lifetime of between 2061 and 2125) of 30% is considered to be acceptable.

3.7.76 It is noted that the Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22) incorporates a 50% climate change uplift based on the Upper End allowance for the 2070's epoch. The percentage uplift to be used within Converter Site drainage strategy calculations is greater than the standard uplift detailed within the above paragraph and as a result, the drainage network has been designed to accommodate a greater volume of surface water than required as standard.

Sea Level Rise

3.7.77 The EA expect sea level rise to increase flood risk at coastal locations. **Table 3.23** presents the anticipated sea level rise for given timeframes associated with climate change for the South West River Basin District. There are a range of allowances for each river basin district and epoch for sea level rise.

Table 3.23: Sea level allowances for each epoch in mm for each year

River Basin District	Allowance category	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (metres)
South West	Higher Central	5.8 (203)	8.8 (264)	11.7 (351)	13.1 (393)	1.21
	Upper End	7 (245)	11.4 (342)	16 (480)	18.4 (552)	1.62

Sea level allowances for each epoch (mm) for each year are based on a 1981 to 2000 baseline – the total sea level rise for each epoch is in brackets.

3.7.78 The Landfall at Cornborough Range would be constructed using HDD under the seabed and shoreline, pulling the offshore cables (from the sea towards the land) through underground ducts and connecting to the onshore cables at transition joint bays. The Landfall HDD crosses underneath extents of Flood Zone 2 and 3 associated with coastal flooding and the transition joint bays are to be located at the top of the Cornborough Range, at approximately 12 mAOD (meters Above Ordnance Datum) and within Flood Zone 1. It is understood the duration of works will be 18 months in the initial phase, with the second phase of works at the Landfall would continue for a further six months.

3.7.79 Using the 'Coastal Design Sea Levels - Coastal Flood Boundary Extreme Sea Levels (2018)' the T200 and T1,000 sea levels for chainage 216 closest to the Landfall are 5.62 mAOD and 5.74 mAOD respectively. Based on the upper end allowance projected sea level rise between 2018 and 2033 of 68.4 mm, it has been assessed the area of construction and the temporary construction compound will not be affected by sea level rise during the 200 and 1,000-year tidal events.

3.7.80 Further discussions are to be undertaken with the EA after the submission of the ES to discuss climate change allowances (including allowances for wave action) applicable to the Proposed Development in more detail.

Key Receptors

3.7.81 **Table 3.24** identifies the receptors taken forward into the assessment.

Table 3.24: Key receptors taken forward to assessment

Receptor	Description	Sensitivity/Value
Water bodies (Main rivers and ordinary watercourses).	Taking a precautionary approach in assuming surrounding water bodies (surface water and groundwater) have achieved/maintained 'Good' status at the time when construction begins, the surface watercourses within the study area have been assessed with a WFD status of 'Good'.	Water bodies are considered to have a high value, high vulnerability, and medium recoverability. The sensitivity of the receptor is therefore, considered to be **high**.
The beach at Cornborough Range	The Landfall, located at the Cornborough Range, comprises a dry valley with shingle beach and is located within the geologically designated Mermaid's Pool to Rowden Gut	The beach at Cornborough Range is considered to have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

Receptor	Description	Sensitivity/Value
	SSSI. Landfall is located within EA Flood Zone 1 and 3.	
Mermaid's Pool to Rowden Gut SSSI	The designated coastal section at Landfall exposes the only complete sequence available through the Bideford Formation – a localised development of fluvio-lacustrine 'Coal Measure' type deposits.	The SSSI is considered to have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.
Taw-Torridge Estuary SSSI	The 250 m buffer zone of the Onshore Infrastructure Area is located within the 1,000 m impact zone. The Taw-Torridge Estuary is of major importance for its overwintering and migratory populations of wading birds. In addition, rare plants grow along its shores.	The estuary is considered to have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.
NVZs	NVZs are areas designated as being at risk from agricultural nitrate pollution within the study area include Jennetts Reservoir and Gammaton Lower Reservoir	NVZs are considered to have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.
Drinking Water Protected Areas (Surface Water)	Locations where over water is abstracted for human consumption (either over 10m^3 per day or serving more than 50 persons) or is intended for such future use. Within the study area, this includes Gammaton Lower Reservoir and Gammaton Upper Reservoir.	Drinking water protected areas are considered to have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.
Flood defences	Inland of the Landfall within the study area, formal flood defences are present along the banks of the River Torridge, offering protection against flooding. The beach profile at Landfall also provides an informal flood defence due to its elevation.	Flood defences are considered to have a high value, medium vulnerability, a medium recoverability. The sensitivity of the receptor is considered to be **high**.
Adjacent land	The majority of Onshore Infrastructure Area is situated within a mainly rural area, with limited residential properties within the surrounding area. The settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area.	Adjacent land within the study area is considered to have a high vulnerability, low recoverability, and high value. The sensitivity of the receptor is therefore, considered to be **high**.
Field drainage	Field drainage is located within agricultural fields.	Field drains are considered to have a moderate vulnerability, moderate to high recoverability and low value. The sensitivity of the receptor is therefore considered to be **medium**.
Water supply and drainage infrastructure	Private water supplies and drainage infrastructure and water supply and drainage infrastructure operated by South West Water.	Drainage pipelines are considered to have a moderate value and contribute to the local and regional economy. It has high vulnerability due to high costs. The sensitivity of the receptor is therefore considered to be **high**.

3.8 Mitigation Measures Adopted as Part of the Proposed Development

3.8.1 For the purposes of the EIA process, the term *'measures adopted as part of the Proposed Development'* is used to include the following types of mitigation measures (adapted from IEMA, 2016). These measures are set out in Volume 1, Appendix 3.1: Commitments Register of the ES.

- Embedded mitigation. This includes the following.
  - Primary (inherent) mitigation - measures included as part of the Proposed Development design. IEMA describes these as '*modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project and do not require additional action to be taken'*. This includes modifications arising through the iterative design process. These measures will be secured through the consent itself through the description of the project and the parameters secured in the DCO and/or marine licences. For example, a reduction in footprint or height.
  - Tertiary (inexorable) mitigation- IEMA describes these as '*actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects*'. It may be helpful to secure such measures through a Construction Environmental Management Plan or similar.
- Secondary (foreseeable) mitigation- IEMA describes these as '*actions that will require further activity in order to achieve the anticipated outcome'*. These include measures required to reduce the significance of environmental effects (such as lighting limits) and may be secured through environmental management plan.

3.8.2 In addition, where relevant, measures have been identified that may result in enhancement of environmental conditions. Such measures are clearly identified within Volume 1, Appendix 3.1: Commitments Register of the ES. The measures relevant to this chapter are summarised in **Table 3.25**.

3.8.3 Embedded measures that will form part of the final design (and/or are established legislative requirements/good practice) have been taken into account as part of the initial assessment presented in **section 3.10** to **3.12** below (i.e., the initial determination of impact magnitude and significance of effects assumes implementation of these measures). This ensures that the measures to which the Applicant is committed are taken into account in the assessment of effects.

3.8.4 Where an assessment identifies likely significant adverse effects, further or secondary mitigation measures may be applied. These are measures that could further prevent, reduce and, where possible, offset these effects. They are defined by IEMA as actions that will require further activity in order to achieve the anticipated outcome and may be imposed as part of the planning consent, or through inclusion in the ES (referred to as secondary mitigation measures in IEMA, 2016). For further or secondary measures both pre-mitigation and residual effects are presented.

Table 3.25: Mitigation measures adopted as part of the Proposed Development

Commitment Number	Measure Adopted	How the Measure Will be Secured
Embedded Measures		
ONS67	HDD (or other trenchless methodology) entry and exit points will be located at least: • 10 m away from the banks of ordinary watercourses; and • 16 m from banks of the River Torridge, a tidal EA Main River, and the landward toe of associated formal and informal flood defences. The trenchless crossing depth will be determined by the depth of suitable rock as identified during supplementary ground investigation surveys. The anticipated crossing depth underneath watercourses is as follows: • 5 m for Kenwith Stream; • 9 m for the tributary of Jennetts Reservoir; and • 15 m for the River Torridge. The trenchless crossing depth for all other watercourse crossings is to be ascertained at detailed design stage and a factor of safety incorporated within engineering calculations to account for climate change impacts to peak watercourse flows and rates of incision. Where EA flood defences are present, a minimum 1.5 m vertical clearance will be maintained between the hard bed of the watercourse and the landward toe of those flood defences.	DCO Schedule 2, Requirement 7 (Management plans)
ONS68	The following buffers will be maintained between watercourses and all temporary working areas for the Onshore HVDC Cable Corridor and HVAC Cable Corridors, and temporary construction compounds. • 10 m away from the banks of ordinary watercourses; and • 16 m from tidal EA Main Rivers and the landward toe of associated formal and informal flood defences. The same buffer will be maintained at the Converter Site, excluding the landscaping and drainage.	DCO Schedule 2, Requirement 7 (Management plans).
ONS21	An Outline Onshore Construction Environmental Management Plan (Outline On-CEMP) has been prepared as part of the application for development consent (document reference 7.7). Onshore Construction Environmental Management Plan(s) (On-CEMP(s)) will be developed to align with the Outline On-CEMP. The On-CEMP(s) will set out measures to reduce Greenhouse Gas emissions associated with the construction of the Proposed Development and will include, where reasonably practicable, the following mitigation measures: • Pre-fabricated elements delivered to the site ready for assembly, which will reduce on-site construction	DCO Schedule 2, Requirement 7 (Management plans)

Commitment Number	Measure Adopted	How the Measure Will be Secured
	waste and reduce vehicle movements as part of the construction process. • Vehicles used in road deliveries of materials, equipment and waste arisings on- and off-site would be loaded to full capacity, wherever practicable, to minimise the number of journeys associated with the transport of these items. • All machinery and plant would be procured to adhere with relevant good practice emissions standards at the time of procurement and should be maintained in good repair to remain fuel efficient. • When not in use, vehicles and plant machinery involved in site operations would be switched off to further reduce fuel consumption. • The volume of waste generated would be minimised, and resource efficiency maximised, by applying the principles of the waste hierarchy throughout the construction period. Segregated waste storage should be employed to maximise recycling potential for materials. • Equipment and machinery requiring electricity would only be switched on when required for use. Procedures would be implemented to ensure that staff adhere to good energy management practices, e.g. through turning off lights, computers and heating/air conditioning units when not in use. • Temporary construction haul roads would be developed utilising recycled aggregates to minimise embodied carbon impacts.	
ONS07	An Outline Pollution Prevention Plan (PPP) forms an appendix to the Outline On-CEMP, which has been prepared as part of the application for development consent (document reference 7.7, Appendix A). Onshore PPP(s) would be developed in accordance with the Outline PPP and would include details of emergency spill response procedures. Good practice guidance detailed in the Environment Agency's Pollution Prevention Guidance notes, CIRIA guidance or the latest relevant available guidance would be followed, where appropriate and reasonably practicable.	DCO Schedule 2, Requirement 7 (Management Plans)
ONS69	A Construction Drainage Strategy would be developed post-consent and in accordance with the Outline On-CEMP, which outlines the measures and details to be incorporated into the strategy. The Construction Drainage Strategy would incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as reasonably practicable during the construction stage.	DCO Schedule 2, Requirement 7 (Management plans)
ONS04	An Outline Decommissioning Strategy has been submitted as part of the application for development consent (document reference 7.18), which details that onshore and offshore decommissioning plans will be prepared in accordance with the principles set out in the Outline Decommissioning Strategy, if decommissioning of the	DCO Schedule 2, Requirement 16 (Decommissioning Strategy)

Commitment Number	Measure Adopted	How the Measure Will be Secured
	Proposed Development is required at the end of the Proposed Development's operational life. The onshore decommissioning plan(s) will be developed in consultation with the relevant authority(ies) and in line with the latest available guidance, legislation and any new technologies available at the time of the Proposed Development's decommissioning. The onshore decommissioning plan(s) will include an assessment of the need to remove above ground infrastructure and the decommissioning of below ground infrastructure and include details relevant to flood risk (e.g. maintenance/reinstatement of existing land drainage), pollution prevention and avoidance of ground disturbance. The onshore decommissioning plan(s) will also include provision for the protection (during decommissioning) of any significant archaeological remains within the Onshore Infrastructure Area which were identified and protected from harm during construction.	
ONS70	An Outline Operational Drainage Strategy would be developed post-consent, in accordance with the Outline Operational Drainage Strategy that has been provided as part of the application for development consent (document reference 7.22). The Outline Operational Drainage Strategy would include measures to limit discharge rates and attenuate flows to maintain greenfield runoff rates at the Converter Site. The Outline Operational Drainage Strategy would be developed as far as reasonably practicable in line with the latest relevant drainage guidance.	DCO Schedule 2, Requirement 13 (Operational drainage)
ONS71	Land Drainage consents will be sought where required from the Devon County Council (as Lead Local Flood Authority) in consultation with the Environment Agency.	DCO Schedule 2, Requirement 7 (Management plans)
ONS72	Consents/permits relating to dewatering activities that may affect surface water and / or groundwater are to be obtained from the Environment Agency as and when required during the construction phase of the Project. The permitting authority will decide the conditions of the consent to ensure that construction does not result in significant alteration to the hydrological regime or an increase in fluvial risk as far as reasonably practicable.	DCO Schedule 2, Requirement 7 (Management plans)
ONS08	An Outline Bentonite Breakout Plan has been prepared as part of the application for the development consent (document reference 7.21). Bentonite Breakout Plan(s) would be developed in accordance with the Outline Bentonite Breakout Plan.	DCO Schedule 2, Requirement 7(2)(c) (Management Plans)
ONS75	A Flood Management Plan will form part of the final On-CEMP and will be prepared for works taking place within a Flood Warning/Flood Alert area. During the construction phase the Principal Contractor will sign up to the Flood Warning Service and will be alerted by a phone call or text when a Flood Warning becomes active to enable site personnel to be evacuated from the site in a timely manner prior to a flood event occurring.	DCO Schedule 2, Requirement 7 (Management plans)

Commitment Number	Measure Adopted	How the Measure Will be Secured
ONS76	Prior to construction, geomorphological surveys would be undertaken on ordinary watercourses that may be crossed by trenched techniques. Surveys would be used to inform detailed design of crossing methodologies prior to construction. Indicative crossing methodologies are presented within Volume 1 Appendix 3.2: Onshore Crossing Schedule of the ES.	DCO Schedule 2, Requirement 7 (Management plans)
ONS74	Prior to the commencement of construction works, a risk assessment would be undertaken for identified sensitive surface and groundwater receptors, including springs, private water supplies and ordinary watercourses to identify the need for further investigations such as a water features survey. The work would inform any mitigation measures required to minimise potential impacts as far as reasonably practicable. Where a potential impact is identified concerning Gammaton Reservoirs, options to mitigate this impact will be developed based upon the findings of the risk assessment and in consultation with relevant stakeholders, incorporating feedback as far as reasonably practicable.	DCO Schedule 2, Requirement 7 (Management plans)
ONS06	A Dust Management Plan (DMP) would be incorporated within the On-CEMP(s) and measures in relation to air quality and dust management, as outlined in the Institute of Air Quality Management guidance (IAQM, 2024). A DMP assists in the appropriate management techniques to limit dust soiling from construction and decommissioning activities as far as reasonably practicable. Air quality and dust management measures, as outlined in IAQM guidance (IAQM, 2024) would be included. An Outline DMP has been provided as an appendix to the Outline On-CEMP as part of the application for development consent (document reference 7.7, Appendix C).	DCO Schedule 2, Requirement 7(2)(a) (Management Plans)
ONS77	If ground surveys confirm presence of contamination, the construction of piled foundations would use mitigation measures as defined in the following guidance: Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention (EA, 2001), or latest relevant available guidance.	DCO Schedule 2, Requirement 7 (Management plans)
ONS78	Where required, trenched techniques may be used for minor ditches or smaller watercourses that are frequently dry. In these cases, measures would be implemented as far as reasonably practicable to protect water quality and flow and these would be detailed within the On-CEMP(s).	DCO Schedule 2, Requirement 7 (Management plans)
ONS79	In order to manage impacts to field drainage, the Outline On-CEMP stipulates that the contractor would develop field drainage plans in consultation with the relevant landowners. If required, and as far as reasonably practicable, additional field drainage would be installed to ensure the existing drainage of the land is maintained during and after construction.	DCO Schedule 2, Requirement 7 (Management plans)
Secondary (Further) Measures		

Commitment Number	Measure Adopted	How the Measure Will be Secured
ONS80	Fences, walls, ditches and drainage outfalls will be retained at the landfall and along the Onshore HVDC Cable Corridor and HVAC Cable Corridors, where reasonably practicable. Where it is not reasonably practicable to retain them, any damage will be repaired and reinstated. The EA must be notified if damage occurs to any EA main river or related flood infrastructure.	DCO Schedule 2, Requirement 7 (Management plans)

3.9 Key Parameters for Assessment

Maximum Design Scenario

3.9.1 The maximum design scenarios identified in **Table 3.26** have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the information provided in Volume 1, Chapter 3: Project Description of the ES. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different infrastructure layout), to that assessed here be taken forward in the final design. Therefore, this comprises a conservative assessment of a worst case scenario.

Table 3.26: Maximum design scenario considered for the assessment of impacts

Impact	Phase[1]			Maximum Design Scenario	Justification
	C	O	D		
The impact of contaminated runoff on the quality of surface water and ground receptors	✓	×	✓	**Construction phase: Landfall** • Construction works at the Landfall comprise an initial 18 months of works, with a space between the second phase of works. The second phase of works at the Landfall would continue for a further six months. • Offshore and onshore HVDC Cables are to come ashore via HDD and jointed together at transition joint bays. The Landfall Horizontal Directional Drilling (HDD) has a maximum length of 2,110 m from the entry pit to the transition joint bays. There is a maximum of two transition joint bays, each 750m^2 with a maximum depth of 2.5 m. The HDD has with 4 entry pits with an area of 25 m^2 and maximum depth of 3 m, and 4 exit pits with an area of 225 m^2. The volume of excavated material per entry pit will be 75 m^3. • A 10,000 m^2 Landfall compound is expected to be present for a duration of 36 months. **Construction phase: Onshore HVDC and Cable Corridor** • The temporary and permanent Onshore HVDC Cable Corridor width is 65 m with a length of up to 14.5 km. The temporary and permanent width of the HVAC cable corridor would be 65 m (32.5 m per bipole), with a length of up to 1.2 km. • The expected construction duration for the Onshore HVDC Cable Corridor is up to 36 months. The expected construction period for the onshore HVAC Cables is a total of 12 months. • The maximum number of cable trenches for Onshore HVDC Cable Corridor will be two with a maximum trench width at ground level of 4.3 m and depth of 1.4 m. The number of cable trenches for the Onshore HVAC Cable	**Construction phase** Open cut trenching will result in largest compound footprint and largest area of disturbance (compared to HDD) at the Landfall. This represents the maximum design scenario in terms of potential for runoff, spillage and direct disturbance to water bodies (where present). However, HDD or alternative trenchless techniques will be used to install the Landfall and cross water bodies, major roads and an archaeological asset. In terms of areas affected by the onshore cable corridors and converter stations, the maximum design scenario is represented by the largest working areas and number of trenches, which arise from the construction of the Proposed Development. In terms of duration, the maximum design scenario is represented by the duration of the Onshore HVDC Cable Corridor construction. Where options remain for watercourse crossings, open cut trenching represents the maximum design scenario in terms of direct disturbance. HDD (or similar trenchless techniques) is committed for crossings of Main rivers and some ordinary watercourses, where possible. As flood risk to and from the construction of either cable corridor option is considered to be the same, the worst-case scenario is considered to be the construction of either of the two options. **Decommissioning phase** Decommissioning is likely to operate within the parameters identified for construction.
The impact of increased flood risk arising from additional surface water runoff as a result of construction activities.	✓	×	✓		
The impact of increased flood risk arising from watercourse crossings	✓	×	✓		
The impact of damage to existing field drainage	✓	×	✓		
The impact of damage to existing water supply and drainage infrastructure	✓	×	✓		
The impact of increased flood risk arising from damage to existing flood defences.	✓	×	✓		

Impact	Phase[1]			Maximum Design Scenario	Justification
	C	O	D		
				Corridor will be four with an approximate trench width at ground level of 4.9 m and a depth of 1.4 m. • In regards to HDD, The maximum number of HDD locations will be 6 (including Landfall) along the Onshore HVDC Cable Corridor with two compounds per HDD (excluding Landfall which will have one compound), each with an area of 10,000 m^2. • Within the Onshore HVDC Cable Corridor, there will be up to 34 joint bays, each with a below ground area of 100 m^2 and a depth of 1.4m. The distance between jointing bays would be between 800 and 1,100 m. • Within the Onshore HVDC Cable Corridor, there will be up to 34 link boxes each with a below ground area of 2.25 m^2 and a depth of 1.4 m. The distance between link boxes would be between 800 and 1,100 m. • The main construction compound at Gammaton Road is to have an area up to 63,000 m^2 and is expected to be present for a duration of 72 months. • A secondary construction compound (A39 compound) is to have an area up to 48,000 m^2 and is expected to be present for a duration of 36 months. • Dimensions of temporary culvert/bridge crossings for the haul road will be 7 m wide. **Construction phase: Converter Site** • The Converter Site, including buildings, landscaping, planting and drainage, would have a footprint of 395,000 m^2. • The two converter station platforms would have a combined footprint of 130,000 m^2. • A 20,000 m^2 converter compound is expected to be present for a duration of 72 months. **Construction phase: Highways Improvements**	

Impact	Phase[1]			Maximum Design Scenario	Justification
	C	O	D		
				• Road improvements to local highways and road networks including lane widening, new lanes and junctions. **Decommissioning: Landfall** • The cables within the Landfall HDD will be pulled out at the landward end and recycled. Cables are to be left *in-situ* below MHWS. **Decommissioning: Onshore HVDC and HVAC Cables** • HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. • Cable ducts, joint bays and link boxes would be left *in-situ*, to minimise environmental disturbance. **Decommissioning: Converter Stations** • If the operation of the converter stations does not continue beyond 50 years, they are to be decommissioned. • Decommissioning is likely to operate within the parameters identified for construction (i.e., any activities are likely to occur within construction working areas and to require no greater amount or duration of activity than assessed for construction). **Decommissioning: Highways Improvements** • Highways improvements would not have a forecast end life and would not be decommissioned.	

Impact	Phase[1]			Maximum Design Scenario	Justification
	C	O	D		
The impact of increased flood risk arising from additional surface water runoff as a result of operation of the Converter Site	×	✓	×	**Operation and maintenance phase: Landfall** • Transition joint bays: 300 m^2 (150 m^2 for two transition joint bays) **Operation and maintenance phase: onshore cable corridor** • 34 Joint bays: An area below ground of 100 m^2 per joint bay. • 34 Link boxes: An area below ground of 2.25 m^2 per link box. **Operation and maintenance phase: Converter Site** • The Converter Site, including buildings, landscaping, planting and drainage, would have a footprint of 395,000 m^2. • The two converter station platforms would have a combined footprint of 130,000m^2	**Operation and maintenance phase** The maximum design scenario is represented by the largest permanent areas of impermeable surface/hard standing, which represent the worst case in terms of changes in runoff rates and flood risk to the surrounding area.

[1] C=construction, O=operation and maintenance, D=decommissioning

3.10 Assessment of Construction Effects

3.10.1 The impacts of the construction of the Proposed Development have been assessed. The impacts arising from the construction phase of the Proposed Development are listed in **Table 3.26**, along with the maximum design scenario against which each impact has been assessed.

3.10.2 A description of the likely effect on receptors caused by each identified impact is given below.

The Impact of Contaminated Runoff on the Quality of Surface Water and Ground Receptors

3.10.3 During construction of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of accidental discharges of untreated runoff containing contaminants. It is anticipated that any untreated runoff will eventually outfall to Main rivers and ordinary watercourses located downstream. Untreated runoff also has the potential to infiltrate *in-situ* into groundwater confined within superficial deposits and solid geology underlying the study area.

3.10.4 There are a number of potential pollutants which could arise during construction and decommissioning, which may affect the water quality of receiving watercourses. These include:

- fine particulate materials (e.g., silts and clays);
- cement;
- oil and chemicals (from plant machinery and processes); and
- other wastes such as wood, plastics, sewage and rubble.

3.10.5 These pollutants may be present as a result of normal construction activities, such as excavation, dewatering, incorrect storage of oils and chemicals and/or accidental spillage.

3.10.6 Within this chapter, the focus is primarily on surface water receptors. Impacts on groundwater receptors are explored in Volume 2, Chapter 4: Geology, Hydrogeology and Ground Conditions of the ES.

Sensitivity of the Receptor

3.10.7 The majority of the Main Rivers and ordinary watercourses present within the study area discharge to the Taw and Torridge Estuary transitional water body. Several small ordinary watercourses close to the coast are shown to outfall to Barnstaple Bay which flows from the Taw and Torridge Estuary also ultimately discharges to. Watercourses are presented within Figure 3.2 (see Volume 2, Figures). Groundwater within the study area falls within the Torridge and Hartland Streams groundwater water body.

3.10.8 Taking a precautionary approach in assuming surrounding water bodies have achieved/maintained 'good' status at the time when construction begins, the surface watercourses and groundwater bodies within the study area will have

been assessed with a WFD status of 'good'. The watercourses and groundwater bodies are therefore considered to be highly vulnerable in relation to WFD classification status, but of moderate recoverability. The sensitivity of the receptor is therefore, considered to be **high**.

3.10.9 The study area includes Mermaid's Pool to Rowden Gut and Taw-Torridge Estuary SSSI, the latter of which the majority of watercourses within the study area ultimately discharge to. Designated sites are nationally important and thus have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptors is considered to be **high**.

3.10.10 NVZs covering Jennetts Reservoir and Gammaton Reservoirs also noted to have an existing risk of nitrate pollution and Gammaton Reservoirs are also classified as Drinking Water Protected Areas. The designated sites are locally important and have a medium value, high vulnerability and medium recoverability. The sensitivity of the receptor is considered to be **high**.

3.10.11 There is one active surface water abstraction and two private water supplies within the study area. Water supplies are for industrial and potable uses and thus have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptors is considered to be **high**.

Magnitude of Impact

3.10.12 Construction activities may give rise to increases in turbid runoff, an increase in the pH of runoff and remobilisation of contaminants within the ground. Leakages and spills may also occur from machinery use, or refuelling of machinery. Within temporary construction compounds and construction areas the incorrect storage and handling of construction materials, oils and chemicals may result in spills and leaks. Leakages may also arise from welfare facilities within construction compounds. There is a potential for contaminants to impact any potential receiving water body quality and cause a reduction in water body WFD classification.

3.10.13 The excavation of trenching along the HVDC and HVAC cable corridors could also act as a drainage channel where construction runoff containing contaminants can collect and percolate to ground water bodies.

3.10.14 As detailed within Volume 1, Appendix 3.2 Onshore Crossing Schedule, in most cases, HDD (or equivalent trenchless technique) will be used to pass beneath Main Rivers and the majority of ordinary watercourses. Construction works associated with this crossing technique has a risk of bentonite breakout during drilling, where bentonite clay drilling fluid escapes the bore along the path of the drilling, or breaks out where fissured ground overlies the bore. Bentonite breakout has the potential to contaminate water bodies if a continuous pathway is available.

3.10.15 Trenched techniques may be used to cross smaller watercourses (that are frequently dry). Construction activities associated with trenching could lead to damage to the banks along the watercourses, an increase in turbid runoff, spillages/leaks of fuel, oil etc. and an alteration in surface water flow pathways that could affect nearby watercourses.

3.10.16 To ensure no degradation to crossed watercourses, embedded mitigation measures outlined in **Table 3.25** and include the Outline On-CEMP (document reference 7.7), which includes the Outline Pollution Prevention Plan, (Appendix A to the Outline On-CEMP) will intercept runoff and ensure that discharges are

controlled in quality and volume causing no degradation in WFD classification. Furthermore, an Outline Bentonite Breakout Plan has been provided as part of the DCO application (document reference 7.21).

3.10.17 The Outline On-CEMP (document reference 7.7) also includes measures regarding surface water drainage during construction to ensure surface water runoff is intercepted and attenuated on-site, and that surface water discharges are controlled in quality and volume and cause no degradation in WFD classification.

3.10.18 A 10 m buffer will be maintained between the banks of ordinary watercourses, Main Rivers, associated flood defence structures and all temporary working areas for the Onshore Infrastructure Area where practically possible. A 16 m buffer will be maintained between the River Torridge and associated flood defences and all temporary working areas for the Onshore Infrastructure Area.

3.10.19 The impact is predicted to be direct, of local spatial extent, intermittent and short term in duration. The magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.10.20 Overall, the sensitivity of the receptors is considered to be **high** and the magnitude of the impact to watercourses and designated sites are deemed to be **negligible**. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.10.21 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.10.22 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Increased Flood Risk Arising From Additional Surface Water Runoff

3.10.23 During construction of the Proposed Development within the Onshore Infrastructure Area, there is a potential for increased surface water flood risk as a result of higher rates of surface water runoff from increased impermeable areas.

Sensitivity of the Receptor

3.10.24 The Landfall is situated at Cornborough Range which comprises a natural and wide, substantially dry valley with a natural shingle bar which by virtue of elevation, the beach acts as an informal flood defence. The beach is classified as a geologically designated SSSI and thus is nationally important and is located within EA Flood Zones 1, 2 and 3. As such, the Landfall has high value, high

vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.10.25 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.10.26 The majority of Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.10.27 HDD (or a similar trenchless technique) will be used to pass beneath Main rivers and ordinary watercourses, as outlined as primary mitigation within **Table 3.25** (also see Volume 1, Chapter 3: Project Description of the ES). HDD (or a similar trenchless technique) is also to be used at Landfall, with no intertidal excavations proposed. The offshore cables will be installed to the transition joint bays located at the top of the cliffs at Cornborough Range via HDD.

3.10.28 Within areas inland of the Landfall, impacts on flood risk from the Onshore HVDC Cable Corridor would arise from any temporary change in runoff over the areas affected during construction, such as construction compounds, haul road and construction accesses.

3.10.29 Trenched techniques may be used, where appropriate, for minor ditches or smaller watercourses that are frequently dry. Measures put in place to protect water quality and flow are set out in **Table 3.25** and include an outline method statement for the proposed crossing methodologies will be included in the Outline On-CEMP (document reference 7.7) that will accompany the DCO application. This method statement will be developed further in consultation with the EA/LLFA during the detailed design stage.

3.10.30 The Onshore HVDC Cable Corridor and HVAC Cable Corridors could also act as a drainage channel, accumulating runoff from surrounding areas and locally increasing flood risk.

3.10.31 To ensure no degradation to crossed watercourses, embedded mitigation measures outlined in **Table 3.25** and include the Outline On-CEMP (document reference 7.7), which includes the Outline Pollution Prevention Plan (Appendix A to the Outline On-CEMP), will intercept runoff and ensure that discharges are controlled in quality and volume causing no degradation in WFD classification. Furthermore, an Outline Bentonite Breakout Plan has been provided as part of the DCO application (document reference 7.21).

3.10.32 Construction activities within the Onshore Infrastructure Area are cross areas of Flood Zones 2 and 3. The Site Operator will sign up to the Flood Warning Service

to enable site personnel to be evacuated from the site in a timely manner prior to a flood event occurring (as set out in **Table 3.25**).

3.10.33 The impacts on flood risk from the temporary change in runoff are only likely to affect the SSSI and adjacent land receptor and, assuming that designed in and construction measures (as set out in **Table 3.25**) are implemented, there is unlikely to be any observable degradation in flood risk. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.10.34 Overall, the sensitivity for the study area is considered to be **high** and the magnitude of the impacts are deemed to be **negligible**. Therefore, the effect will be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.10.35 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.10.36 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Increased Flood Risk Arising From Watercourse Crossings

3.10.37 Temporary haul roads serving the Onshore HVDC Cable Corridor during the construction phase may require the installation of temporary crossings over ordinary watercourses. Inappropriate design of these crossings can increase flood risk and result in hydrogeomorphological changes to watercourses.

Sensitivity of the Receptor

3.10.38 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.10.39 The majority of the Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study

area is of high vulnerability, low recoverability and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.10.40 Inappropriate design and construction of watercourse crossings can act to restrict flows, increase in flood risk upstream of the crossing and as a result lead to variations in flow rates and rates of erosion and sedimentation. To prevent these impacts, watercourse crossings will be appropriately designed prior to construction to ensure current flow conveyance is maintained measures set out within the Outline On-CEMP (document reference 7.7) (as set out in **Table 3.25**), will be implemented to ensure the risk of flooding is not increased during construction.

3.10.41 As per the maximum design scenario presented within **Table 3.26**, dimensions of temporary culvert/bridge crossings for the haul road will be a maximum 3 m in diameter and 10 m in length. Detailed design of watercourse crossings will be undertaken during detailed design post-consent in consultation with the Environment Agency and LLFA. Crossing design will take into consideration the flow rate and volume conveyed at each watercourse crossing location, in addition to the presence of any existing in-channel structures that can provide an existing constraint on watercourse flows within proximity to proposed crossing locations (distance to be ascertained at detailed design stage). Temporary crossings serving the haul road will be removed and land will be reinstated to its original condition before the end of the construction phase.

3.10.42 The impact is predicted to be direct, of local spatial extent, intermittent and of short term duration. The impact magnitude is therefore predicted to be **negligible adverse**.

Significance of the Effect

3.10.43 Overall, the magnitude of impact is deemed to be **negligible adverse** and the sensitivity of the receptor is considered to be **high**. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.10.44 With implementation of mitigation measures, effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.10.45 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Damage to Existing Field Drainage

3.10.46 During construction of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of damage to existing field drainage arising from construction activities.

Sensitivity of the Receptor

3.10.47 Field drains constructed for field irrigation within the Onshore Infrastructure Area are of moderate value, moderate vulnerability, and moderate recoverability due to costs associated with reinstatement. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of Impact

3.10.48 The impact on field drainage and irrigation from open cut techniques and the installation of link boxes and joint bays during the construction phase could temporarily affect surface water flow pathways. This could have an impact on water quality and potential flow rates.

3.10.49 The removal of field drains within the study area may cause a backup on surrounding field drains, in turn increasing the flood risk to receptors. Measures to manage surface water flows include the restoration of field drainage following additional installation either side of the Onshore HVDC Cable Corridor and techniques to avoid disruption of surface water runoff along the corridor. These measures, as set out in **Table 3.25**, are detailed in the Outline Operational Drainage Strategy (document reference 7.22).

3.10.50 With the incorporation of appropriate construction mitigation techniques, the impact is predicted to be of local spatial extent with a minor shift away from existing hydrological environment of local receptors. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.10.51 Overall, the sensitivity of the receptor is considered to be **medium** and the magnitude of impact is deemed to be negligible. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.10.52 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.10.53 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Damage to Existing Water Supply and Drainage Infrastructure

3.10.54 During construction of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of damage to existing water supply and drainage infrastructure due to construction activities.

Sensitivity of the Receptor

3.10.55 Private water supplies and drainage infrastructure and water supply and drainage infrastructure operated by South West Water (hereafter referred to as 'pipeline infrastructure') are considered to have a moderate value and contribute to the local and regional economy. They have high vulnerability to the construction impacts of the Onshore HVDC Cable Corridor, HVAC Cable Corridors and converter stations and low recoverability due to high costs. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of Impact

3.10.56 The impact on pipeline infrastructure from open cut and HDD techniques during the construction phase could temporarily disrupt local drainage infrastructure, impacting on water quality, potential flow rates and local water supply networks.

3.10.57 The site selection of the Onshore Infrastructure Area has taken into account the location of major services utilities (see Volume 1, Chapter 4: Need and Alternatives of the ES), however, the presence of local drainage cannot be discounted as it is not always mapped by regulators.

3.10.58 Discussions with South West Water and other service companies will be undertaken at the detailed design stage to confirm the location of local services. Micro-routing or appropriate construction techniques will be employed where required to avoid impact to local services and such measures will be detailed in the Outline On-CEMP (document reference 7.7) (as set out in **Table 3.25**). Any works to be undertaken within proximity to South West Water assets will be designed in accordance with the water authorities design standards and will require to be approved by South West Water prior to the commencement of any works.

3.10.59 Any impacts of construction which affect drainage supply infrastructure are likely to cause temporary disruption of water supply to residents/businesses in the local surrounding area. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.10.60 Overall, the sensitivity of the setting is considered to be **high** and the magnitude of the impact is deemed to be **negligible**. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.10.61 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.10.62 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Increased Flood Risk Arising From Damage to Existing Flood Defences

3.10.63 During construction of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of increased flood risk as a result of damage to the existing formal and informal flood defences by construction activities.

Sensitivity of the Receptor

3.10.64 Cornborough Range comprises a natural and wide, substantially dry valley with a natural shingle bar which by virtue of elevation, acts as an informal flood defence against tidal flooding. The Cornborough Range also partially forms Mermaid's Pool to Rowden Gut geologically designated SSSI which is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.10.65 Flood defences are present along either bank of the River Torridge (Main River) within the study area and inland of the Landfall, offering protection against flooding. Figure 3.7 (see Volume 2, Figures) shows the location of flood defences within the study area. Flood defences have a high value, medium vulnerability, a medium recoverability and therefore are considered to have **high** sensitivity.

Magnitude of Impact

3.10.66 Flood defences offering protection to the River Torridge are predominantly comprised of raised earthen embankments maintained by the EA. The elevation of the shingle bar at Cornborough Range which is designated as a SSSI provides an informal flood defence.

3.10.67 The shingle bar at Landfall and the EA maintained flood defences present along the banks of the River Torridge are to be crossed using HDD techniques (or similar trenchless techniques). The impacts on these flood defences from construction activities involving the use of HDD techniques and associated machinery could lead to impacts on the structural stability of earthen embankments at the River Torridge and the shingle bar at the Landfall. There is the potential for this to impact on the integrity of flood defences and lead to an increased risk of flooding to areas which benefit from flood defences.

3.10.68 Construction activities within the Onshore Infrastructure Area will cross areas within Flood Zones 2 and 3. The Site Operator will sign up to the EA's Flood Warning Service to enable site personnel to be evacuated from the site in a timely manner prior to a flood event occurring (as set out in **Table 3.26**).

3.10.69 To ensure no degradation to crossed flood defences, crossing methodologies are to be presented within an onshore crossing schedule (as set out in **Table 3.26**). Embedded mitigation measures outlined in **Table 3.25,** including the Outline On-CEMP (document reference 7.7), which includes the Outline Pollution Prevention Plan (Appendix A to the Outline On-CEMP), are expected to intercept runoff and ensure that discharges are controlled in quality and volume and further prevent degradation to crossed flood defences. Furthermore, an Outline Bentonite Breakout Plan has been provided as part of the DCO application (document reference 7.21).

3.10.70 The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.10.71 The shingle bar at Cornborough Range acts as an informal flood defence and formal flood defences are present along the banks of the River Torridge. Informal and formal flood defences are to be crossed using trenchless techniques to reduce the impact of increased flood risk arising from damage to flood defences. Mitigation measures are expected to ensure there is no degradation to crossed flood defences during the construction phase.

3.10.72 Overall, the sensitivity of the receptors is considered to be **high** and the magnitude of the impact is deemed to be **low**. The effect will therefore be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.10.73 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.10.74 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

3.11 Assessment of Operation and Maintenance Effects

3.11.1 The impacts of the operation and maintenance phase of the Proposed Development have been assessed. The impacts arising from the operation and maintenance phase of the Proposed Development are listed in **Table 3.26**, along with the maximum design scenario against which each impact has been assessed.

3.11.2 A description of the likely effect on receptors caused by each identified impact is given below.

The Impact of Increased Flood Risk Arising From Additional Surface Water Runoff

3.11.3 During operation and maintenance of the Proposed Development, within the Converter Stations, there is a potential for increased surface water flood risk as a result of higher rates of surface water runoff from increased impermeable areas.

Sensitivity of the Receptor

3.11.4 The hydrological catchment the Converter Site is located within discharges to the River Torridge and Taw-Torridge Estuary.

3.11.5 Taking a precautionary approach in assuming surrounding water bodies have achieved/maintained 'good' status at the time when construction begins, the surface watercourses and groundwater bodies within the study area will have been assessed with a WFD status of 'good'. The watercourses and groundwater bodies are therefore considered to be highly vulnerable in relation to WFD classification status, but of moderate recoverability. The sensitivity of the receptor is therefore, considered to be **high**.

3.11.6 The Taw Torridge Estuary is a biologically designated SSSI The designated site is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.11.7 The Converter Site is situated within a mainly rural area, with limited residential properties within the surrounding area. As such, land within the study area is of high vulnerability, low recoverability and moderate value. The sensitivity of the receptor is therefore, considered to be **medium**.

Magnitude of Impact

3.11.8 The Converter Site has been subject to an FRA (Volume 2, Appendix 3.1: Flood Risk Assessment of the ES) in order to meet the requirements of planning policy and best practice.

3.11.9 The Operational Drainage Strategy (as set out in **Table 3.25**) would be developed post-consent, in accordance with the Outline Operational Drainage Strategy submitted with the DCO application (document reference 7.22). The Operational Drainage Strategy is to be agreed with the LLFA and will determine that flows from impermeable areas within each converter station will be restricted to the greenfield runoff rate for up to the 1 in 100-year plus climate change event and thus slightly reduce the risk of flooding to areas downstream. When compared to the baseline, this reduction in flood risk to areas downstream introduces a slight beneficial impact. These measures will be detailed within the Operational Drainage Strategy and agreed with relevant stakeholders.

3.11.10 Additionally, also to be detailed within the Operational Drainage Strategy, the final proposed levels of the converter stations will be engineered to ensure flow

pathway regimes are maintained to convey existing surface water flow pathways on-site to ensure existing flows to watercourses from the site are not altered.

3.11.11 The magnitude of impact is predicted to be of local spatial extent and long term duration. The impact magnitude is therefore predicted to be **negligible beneficial**.

Significance of the Effect

3.11.12 Overall, the sensitivity of the receptor is considered to be **high** and the magnitude of the impact is deemed to be **negligible**. The risk of flooding will be minimised during the operational phase as flows from within each converter station will be restricted to the 1 in 1-year greenfield runoff rate for up to the 1 in 100-year plus climate change event and thus slightly reduce the risk of flooding to areas downstream of the Converter Site. The effect will, therefore, be of **minor beneficial significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.11.13 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.11.14 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

3.12 Assessment of Decommissioning Effects

3.12.1 Although the Proposed Development is not time-limited and consent is not sought for decommissioning, the impacts of a possible future decommissioning phase have been assessed in this EIA for completeness. Assumptions about the potential impacts that may arise from any future decommissioning of the Proposed Development are listed in **Table 3.28**, along with the maximum design scenario against which each impact has been assessed. These assumptions have been informed by the Outline Decommissioning Strategy (document reference 7.17) and professional experience. It is expected that any future decommissioning of the Proposed Development would be carried out under a separate consenting process that would control and monitor the potential environmental effects.

3.12.2 A description of the likely effect on receptors caused by each identified impact is given below.

The Impact of Contaminated Runoff on the Quality of Surface Water and Ground Receptors

3.12.3 During decommissioning of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of accidental discharges of untreated runoff containing contaminants. It is anticipated that any untreated runoff will eventually outfall to Main Rivers and ordinary watercourses located downstream.

Untreated runoff also has the potential to infiltrate *in-situ* into groundwater confined within superficial deposits and solid geology underlying the study area.

Sensitivity of the Receptor

3.12.4 During decommissioning, it is expected receptors will remain as identified during construction, as outlined in **paragraphs 3.10.7** to **3.10.11.**

Magnitude of Impact

3.12.5 During decommissioning, works will be more limited than during construction. onshore HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed, and securely buried as a precautionary measure. Cable ducts, joint bays and link boxes would be left *in-situ*, to minimise environmental disturbance.

3.12.6 When complete decommissioning of the Converter Site is required, then all the electrical infrastructure and buildings would be removed and any waste arising recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be reinstated as far as possible to a suitable use, as informed by the onshore decommissioning plan(s).

3.12.7 The onshore decommissioning plan(s) (as set out in **Table 3.25**) would include an assessment of the need to remove above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to flood risk (e.g. maintenance/reinstatement of existing land drainage), pollution prevention and avoidance of ground disturbance. The approach and methodologies to be implemented would be in accordance with the latest available guidance, legislation and any new technologies at the time of the Proposed Development's decommissioning. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.12.8 Overall, the sensitivity of the receptors is considered to be **high** and the magnitude of the impact to watercourses and designated sites are deemed to be **negligible**. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.12.9 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.12.10 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Increased Flood Risk Arising From Additional Surface Water Runoff

3.12.11 During decommissioning of the Proposed Development within the Onshore Infrastructure Area (including the Converter Site, decommissioning activities are likely to operate within the parameters identified for construction.

Sensitivity of the Receptor

3.12.12 During decommissioning it is expected receptors will remain as identified during construction, as outlined in **paragraphs 3.10.24- 3.10.26.**

Magnitude of Impact

3.12.13 During decommissioning, works will be more limited and less intrusive and extensive than during construction. Onshore HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed, and securely buried as a precautionary measure. Cable ducts, joint bays and link boxes would be left *in-situ*, to minimise environmental disturbance.

3.12.14 When complete decommissioning of the Converter Site is required, then all the electrical infrastructure and buildings would be removed and any waste arising recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be reinstated as far as possible to a suitable use, in accordance with the onshore decommissioning plan(s).

3.12.15 An onshore decommissioning plan(s) (as set out in **Table 3.25**) will be developed prior to decommissioning and will include details relevant to flood risk. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.12.16 Overall, the sensitivity for the study area is considered to be **high** and the magnitude of the impacts are deemed to be **negligible**. Therefore, the effect will be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.12.17 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.12.18 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Increased Flood Risk Arising from Watercourse Crossings

3.12.19 During decommissioning, it is expected receptors will remain as identified during construction, as outlined in **paragraph 3.10.37.**

Sensitivity of the Receptor

3.12.20 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.12.21 The majority of Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.12.22 During decommissioning, works will be more limited than during construction. Onshore HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed, and securely buried as a precautionary measure. Cable ducts, joint bays and link boxes would be *left in-situ*, to minimise disturbance.

3.12.23 Decommissioning of the Converter Site will be reviewed in consideration of any other existing or proposed future use of the converter stations. If complete decommissioning is required, then all the electrical infrastructure and buildings would be removed and any waste arising would be recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be reinstated to a suitable use, in accordance with the onshore decommissioning plan(s).

3.12.24 It is expected haul roads will be constructed during decommissioning to enable these works. Inappropriate design and construction of watercourse crossings can act to restrict flows, increase in flood risk upstream of the crossing and as a result lead to variations in flow rates and rates of erosion and sedimentation. To prevent

these impacts, watercourse crossings will be appropriately designed prior to the decommissioning to ensure current flow conveyance is maintained.

3.12.25 The onshore decommissioning plan(s) (as set out in **Table 3.25**) would include an assessment of the need to remove above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to flood risk (e.g. maintenance/reinstatement of existing land drainage), pollution prevention and avoidance of ground disturbance. The approach and methodologies to be implemented would be in accordance with the latest available guidance, legislation and any new technologies at the time of the Proposed Development's decommissioning. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.12.26 Overall, the magnitude of impact is deemed to be negligible adverse and the sensitivity of the receptor is considered to be high. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Future Monitoring

3.12.27 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Damage to Existing Field Drainage

3.12.28 During decommissioning of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of damage to existing field drainage arising from decommissioning activities.

Sensitivity of the Receptor

3.12.29 During decommissioning it is expected receptors will remain as identified during construction, as outlined in paragraph **3.13.56.**

Magnitude of Impact

3.12.30 During decommissioning, works will be more limited than during construction. Onshore HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed, and securely buried as a precautionary measure. Cable ducts, joint bays and link boxes would be *left in-situ*, to minimise disturbance.

3.12.31 When complete decommissioning of the Converter Site is required, then all the electrical infrastructure and buildings would be removed and any waste arising recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be

reinstated as far as possible to a suitable use, in accordance with the onshore decommissioning plan(s).

3.12.32 The onshore decommissioning plan(s) (as set out in **Table 3.25**) would include an assessment of the need to remove above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to flood risk (e.g. maintenance/reinstatement of existing land drainage), pollution prevention and avoidance of ground disturbance. The approach and methodologies to be implemented would be in accordance with the latest available guidance, legislation and any new technologies at the time of the Proposed Development's decommissioning. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.12.33 Overall, the sensitivity of the receptor is considered to be **medium** and the magnitude of impact is deemed to be **negligible**. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.12.34 With implementation of mitigation measures, effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.12.35 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Damage to Existing Water Supply and Drainage Infrastructure

3.12.36 During decommissioning of development within the Onshore Infrastructure Area, there is a potential risk of damage to existing water supply and drainage infrastructure due to decommissioning activities.

Sensitivity of the Receptor

3.12.37 During decommissioning it is expected receptors will remain as identified during construction, as outlined in paragraph **3.10.54.**

Magnitude of Impact

3.12.38 Water supply and drainage pipelines will already have been disturbed during the construction phase. During decommissioning, works will be more limited than during construction. Onshore HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed and securely

buried as a precautionary measure. Cable ducts, joint bays and link boxes would be left *in-situ*, to minimise disturbance.

3.12.39 When complete decommissioning of the Converter Site is required, then all the electrical infrastructure and buildings would be removed and any waste arising would be recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be reinstated as far as possible to a suitable use, in accordance with the onshore decommissioning plan(s).

3.12.40 The onshore decommissioning plan(s) (as set out in **Table 3.25**) would include an assessment of the need to remove above ground infrastructure and the decommissioning of below ground infrastructure and details relevant to flood risk (e.g. maintenance/reinstatement of existing land drainage), pollution prevention and avoidance of ground disturbance. The approach and methodologies to be implemented would be in accordance with the latest available guidance, legislation and any new technologies at the time of the Proposed Development's decommissioning. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.12.41 Overall, the sensitivity of the receptor is considered to be **high** and the magnitude of the impact is deemed to be **negligible**. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.12.42 With implementation of mitigation measures effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.12.43 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

The Impact of Increased Flood Risk Arising From Damage to Existing Flood Defences

3.12.44 During decommissioning of the Proposed Development within the Onshore Infrastructure Area, there is a potential risk of increased flood risk as a result of damage to the existing formal and informal flood defences by decommissioning activities.

Sensitivity of the Receptor

3.12.45 During decommissioning it is expected receptors will remain as identified during construction, as outlined in **paragraphs 3.10.64** and **3.10.65**.

Magnitude of Impact

3.12.46 During decommissioning, works will be more limited and less intrusive and extensive than during construction. Onshore HVDC and HVAC Cables may be recovered and removed by pulling the cables through the ducts (e.g., for recycling). Otherwise, they will be left in place in the ground with the cable ends cut, sealed, and securely buried as a precautionary measure. Cable ducts, joint bays and link boxes would be left *in-situ*, to minimise environmental disturbance.

3.12.47 When complete decommissioning of the Converter Site is required, then all the electrical infrastructure and buildings would be removed and any waste arising recycled or disposed of in accordance with the waste hierarchy and relevant regulations at the time of decommissioning. The Converter Site may be re-purposed for an alternate use (separately agreed and consented) or would be reinstated as far as possible to a suitable use, in accordance with the onshore decommissioning plan(s).

3.12.48 An onshore decommissioning plan(s) (as set out in **Table 3.25**) will be developed prior to decommissioning and will include details relevant to flood risk. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.12.49 Overall, the sensitivity for the study area is considered to be **high** and the magnitude of the impacts are deemed to be **negligible**. Therefore, the effect will be of **minor adverse significance**, which is not significant in EIA terms.

Further (Secondary) Mitigation and Residual Effect

3.12.50 With implementation of mitigation measures, effects are categorised as 'not significant' and no further mitigation will be required.

Future Monitoring

3.12.51 Following implementation of appropriate recommended mitigation measures set out in **Table 3.25**, effects are not expected to be significant and no future monitoring is proposed.

3.13 Cumulative Environmental Assessment

3.13.1 The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Proposed Development together with other projects and plans. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 1, Appendix 5.3: CEA Screening Matrix). Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

3.13.2 The hydrology and flood risk CEA methodology has followed the methodology set out in Volume 1, Chapter 5: EIA methodology of the ES. As part of the assessment, all projects and plans considered alongside the Proposed

Development have been allocated into 'tiers' reflecting their current stage within the planning and development process.

- Tier 1.
  - Under construction.
  - Permitted application.
  - Submitted application.
  - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact.
- Tier 2.
  - Scoping report has been submitted.
- Tier 3.
  - Scoping report has not been submitted.
  - Identified in the relevant Development Plan.
  - Identified in other plans and programmes.

3.13.3 This tiered approach is adopted to provide a clear assessment of the Proposed Development alongside other projects, plans and activities.

3.13.4 The CEA also considers the Proposed Development and the anticipated NGET Alverdiscott Substation Connection Development (which will be implemented by NGET and thus, does not form part of the Proposed Development) together. This is because the NGET Alverdiscott Substation Connection Development will be required for the connection of the Proposed Development to the national grid.

3.13.5 The specific projects, plans and activities scoped into the CEA, are outlined in **Table 3.27**. The locations of such projects, plans and activities are presented on Volume 2, Figure 3.9 of the ES.

Table 3.27: List of cumulative developments considered within the CEA

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
Tier 1						
1/0359/2024/FULM	Permitted	Partially within the Onshore Infrastructure Area	Reserved matters application for details of appearance, landscaping, layout and scale in respect of a proposal for 274 no. dwellings, associated infrastructure and open space pursuant outline planning permission 1/0039/2014/OUTM (Amended Plans).	Unknown	Unknown	Yes
1/1057/2021/FULM	Permitted	Partially within the Onshore Infrastructure Area	Installation and operation of a solar farm together with all associated works, equipment and infrastructure (Further Information).	Unknown	Unknown	Yes
1/1256/2021/REMM	Permitted	0.1	Reserved matters application for details of appearance, landscaping, layout and scale in respect of a proposal for 276 no. dwellings, associated infrastructure and open space pursuant outline planning permission 1/0039/2014/OUTM (Amended Plans).	Unknown	Unknown	No
1/1266/2022/REMM	Pending	0.1	Reserved matters application for details of appearance, landscaping, layout and scale for 61 no. dwellings and associated works pursuant to application 1/1086/2017/OUTM.	Unknown	Unknown	No
1/0252/2022/OUTM	Permitted	0.2	Outline application for the erection of up to 400 dwellings, amenity open space, footpath links, associated landscaping and infrastructure works	Unknown	Unknown	No

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			with all matters reserved except access (Affecting a Public Right of Way).			
1/0523/2021/REMM	Permitted	0.2	Reserved matters application for access, appearance, landscaping, layout & scale pursuant to planning approval 1/0521/2021/FULM.	Unknown	Unknown	No
1/0110/2023/REMM	Pending	0.3	Reserved matters application for appearance, landscaping, layout and scale for a proposal of 200 dwellings pursuant to outline planning permission 1/0947/2020/OUTM and associated infrastructure (Amended Plans).	Unknown	Unknown	No
1/0656/2020/OUTM	Permitted	0.7	Outline application for up to 211 dwellings, up to 4.27 hectares of commercial land (Use Classes B2, B8 and E(g)), public open space, and other associated infrastructure with all matters reserved except access.	Unknown	Unknown	No
1/0880/2021/FULM	Permitted	0.7	Erection of 117 dwellings and associated works including site access.	Unknown	Unknown	No
1/0787/2018/FULM	Permitted	0.4	Proposed new business hub incorporating a conference centre, new offices, a gym, nursery, associated car parking and landscaping.	Unknown	Unknown	No
1/0410/2022/FULM	Permitted	0.5	Extension of time of planning permission 1/0327/2008/FUL for the erection of 12 new dwellings with parking (Variation of conditions 2, 3, 12	Unknown	Unknown	No

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			& 13 of Planning Approval 1/0233/2012/EXTM (formerly 1/0327/2008/FUL).)			
1/0682/2021/FULM	Under Construction	0.7	Reserved Matters (appearance, landscaping, layout and scale) application pursuant to 1/1084/2015/OUTM application for 145 dwellings, with associated public open space, play areas, landscaping and access from Cornborough Road following demolition of 2 existing dwelling. (Variation of Conditions 1 (plans schedule) and condition 2 (materials) pursuant to application 1/0363/2020/REMM.	Unknown	Unknown	No
1/0926/2020/OUTM	Permitted	0.6	Outline planning application for the erection of up to 290 dwellings, including affordable housing with public open space, landscaping and SuDS and two vehicular access points from Abbotsham Road. All matters reserved except access.	Unknown	Unknown	No
1/1130/2020/FULM	Operational	Adjacent to Onshore Infrastructure Area	Extension to operational life. Construction of photovoltaic (PV) solar array and associated works (Variation of condition 3 of planning permission 1/0997/2012/FULM).	Unknown	Unknown	Yes
1/0894/2021/FULM	Permitted	0.6	Reserved matters application for appearance, access, landscaping, layout & scale pursuant to planning approval 1/0111/2016/OUTM for the erection of 26 residential dwellings,	Unknown	Unknown	No

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			associated infrastructure and open space. (Variation of Condition 1 of application).			
1/0896/2019/DIS	Permitted	Adjacent to Onshore Infrastructure Area	Business letting units, car parking lots, access, drainage and landscaping. This application forms plot 3 of the previous planning application 1/116/2007/FUL - Bideford Business Park.	Unknown	Unknown	Construction and operation phase
1/1141/2022/LA	Permitted	Adjacent to Onshore Infrastructure Area	Erection of building for the processing of household recycling materials and food waste, provision of vehicle workshop, office and welfare and all ancillary facilities including access roadway - EX39 4QE.	Unknown	Unknown	Construction and operation phase
1/0028/2012/EXTM	Permitted	0.1	Extension of time of Planning Permission 1/1140/2008/FUL - Industrial letting units for B1 B2 and B8 uses - Plot 6, within the Bideford Business Park Development area.	Unknown	Unknown	Construction and operation phase
1/0380/2024/LA	Pending	0.2	Erection of building for the provision of vehicle workshop, office & welfare and all ancillary facilities, access and cycle/pedestrian improvements.	Unknown	Unknown	Construction and operation phase
1/0552/2024/REM	Permitted	1.1	Substation, landscaping and hardstanding.	Unknown	Unknown	Construction and operation phase
Tier 3						
Alverdiscott Substation Connection Development	Unknown	Within the Onshore Infrastructure Area	The development required at the existing Alverdiscott Substation Site, which is envisaged to include development of a new 400 kV	Unknown	Unknown	Construction and operation phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			substation, and other extension modification works to be carried out by National Grid Electricity Transmission. This does not form part of the Proposed Development, however, it is considered cumulatively within the Environmental Impact Assessment as it is necessary to facilitate connection to the national grid. It is anticipated that NGET would utilise the existing land holding to build the 400 kV substation to accommodate the connection to the transmission network. It is assumed that the maximum development area for the Alverdiscott Substation Connection Development could comprise up to 3.8 ha of land. Within that area it is assumed that the substation itself will occupy a footprint of approximately 2.8 ha, with a maximum height of 15 m, excluding connecting tower structures. It should also be noted that the existing 400 kV side of the substation is approximately 1 ha and would be incorporated into the above totals.			
Policy BID01	N/A	Adjacent to Onshore Infrastructure Area	A site of about 71 ha West of Bideford, between Abbotsham Road and Clovelly Road, as defined on Policies Map 2, is allocated to deliver a sustainable, high quality mixed use development that will be developed in	Unknown	Unknown	Construction and operation phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			a comprehensive manner and includes: (a) approximately 1,050 dwellings, providing a mix of housing types (b). a mix of commercial and employment uses on about 5 hectares at Atlantic Park (c). integrated social and community infrastructure, including a 420 place primary school with early years provision and a children's centre delivery base, with associated sports and play facilities and a mixed-use local centre providing a range of facilities.			
Policy BID02	N/A	0.2	Land at Cleave Wood, extending to about 13 hectares and as defined on Policies Map 2, is allocated as a mixed use development that includes: (a) approximately 250 dwellings including affordable homes, with an emphasis on providing a mix of housing types and sizes that reflects local needs; (b) health care facilities, including related car parking on a site of about 0.6 hectares; and (c) a neighbourhood community centre, including a Children's Centre base and satellite youth facilities.	Unknown	Unknown	Construction phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
Policy BID03	N/A	0.4	Land adjoining Manteo Way, extending to 17 hectares, as defined on Policies Map 2, is allocated for residential and associated development, that includes: (a) approximately 310 dwellings, providing a mix of housing types and size to reflect local need, including affordable housing; and (b) a 2.5 hectare site for open space and recreation facilities.	Unknown	Unknown	Construction and operation phase
Policy BID04	N/A	Adjacent to Onshore Infrastructure Area	A site of about 34 hectares south of East-the-Water, as defined on the Policies Map 2, is allocated to deliver a sustainable, high quality mixed use development that includes: (a) approximately 600 dwellings, providing a mix of housing types and size to reflect local need, including affordable housing, of which approximately 430 are expected to be delivered in the plan period; (b) a 420 place primary school, including a nursery and a children's centre delivery base; (c) a hill top park; and (d) strategic planting along the site's southern and eastern boundaries.	Unknown	Unknown	Construction and operation phase
Policy BID05	N/A	0.7	Land adjoining Caddsdown Business Park, extending to about 18 hectares and as defined on Policies Map 2, will be developed comprehensively to	Unknown	Unknown	Construction and operation phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			deliver a sustainable, high quality mixed use development that includes: (a) approximately 8 hectares of land for economic development focused on BI, B2 and B8 uses as appropriate to the site and its wider context, ensuring that there is a mix of unit sizes to enable business start up and expansion; (b) approximately 130 dwellings, including affordable homes, with an emphasis on providing a mix of housing types and sizes that reflects local needs; and (c) an integrated highway network that incorporates: (i) the formation of a new east-west aligned vehicular link, as part of a wider distributor road through BID09 and extending to the site's eastern boundary; (ii) the provision of an extended spinal estate road for Caddsdown Business Park to service the new economic development; and (iii) the formation of a new junction onto Clovelly Road, providing access to the site from its north eastern boundary.			
Policy BID07	N/A	0.8	Policy BID07: Bideford Regeneration Sites	Unknown	Unknown	Construction and operation phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			Regeneration and revitalisation of the town centre will be supported through schemes on the following sites, as defined on Policies Map 2, that will be delivered in a comprehensive manner: (a) East-the-Water Wharfs - a mix of housing, leisure and retail uses to improve connectivity with Bideford West and secure an active and attractive waterfront use; (b) the former Livestock Market – an extension to existing leisure and recreation facilities supported by an improved public car parking facilities; (c) the Pill – providing a range of commercial and leisure facilities supported by an at least maintained level of public car parking; bringing together a disparate range of uses to increase the areas use and attraction; (d) Bridge Street Car Parks – residential focused development with retail uses and maintained levels of public car parking, improving the intensity of site use and encouraging movement to the Pannier Market area of the town; (e) New Road (North) - development that results in an enhancement to the southern gateway to Bideford, and			

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			(f) New Road (South) - development that results in an enhancement to the southern gateway to Bideford.			
Policy BID08	N/A	Partially within the Onshore Infrastructure Area	Policy BID08: Former Bideford to Appledore Railway In association with landowners, voluntary organisations, the Highway Authority, and other interested parties, Torridge District Council will seek the establishment of a trail, following where possible the route of the former Bideford to Appledore Railway from Northam Road to Westward Ho!	Unknown	Unknown	Construction and operation phase
Policy BID09	N/A	Adjacent to Onshore Infrastructure Area	Land at Adjavin Farm, south of Clovelly Road, extending to 41 hectares and as defined on Policies Map 2, is allocated for residential and associated development, that includes: (a) approximately 700 dwellings including affordable homes, with an emphasis on providing a mix of housing types and sizes that reflects local needs; (b) integrated social and community infrastructure, including a neighbourhood community centre; (c) on site provision of sport and recreation facilities, including sports pitches adjoining Clovelly Road/Atlantic Village; (d) a vehicular link forming part of a wider distributor link to the south of	Unknown	Unknown	Construction and operation phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			Clovelly Road connecting with the Caddsdown Industrial Park Extension, allocated by Policy BID05; and (e) strategic planting along the site's southern boundary and western boundaries.			
Policy BID10	N/A	1.0	Land at Clovelly Road Industrial Estate, extending to approximately 1.2 hectares as defined on Policies Map 2, is allocated for economic development. The site will be developed in accordance with the following site specific development principle: (a) vehicular access to be provided from the Clovelly Road Industrial Estate Road.	Unknown	Unknown	Construction and operation phase
Policy NOR01	N/A	0.9	A site of about 32 hectares at Daddon Hill, as defined on Policies Map 8A, is allocated to deliver a sustainable, high quality mixed use development that includes: (a) approximately 500 dwellings, providing a mix of housing types and size to reflect local need, including affordable housing and an Extra Care facility; (b) a 420 place primary school with an associated nursery and children's centre delivery base, located to maximise accessibility to the resident catchment; and	Unknown	Unknown	Construction and operation phase

Project	Status	Distance from Onshore Infrastructure Area (km)	Description	Dates of Construction (if available)	Dates of Operation (if available)	Overlap with the Proposed Development?
			(c) a neighbourhood community centre.			
Policy NOR02	N/A	0.5	Policy NOR02: Site West of Buckleigh Road Land to the west of Buckleigh Road, extending to about 30 hectares and as defined on Policies Map 8A, will be comprehensively planned to deliver a sustainable, high quality mixed use development that includes: (a) approximately 740 dwellings, providing a mix of housing type and size to reflect local need, including those of the area's elderly population and affordable housing; and (b) a local centre, including facilities to accommodate community and retail uses.	Unknown	Unknown	Construction and operation phase
Policy ABS01	N/A	0.1	Policy ABS01: Land at The Glebe Land at the Glebe, as shown on Policies Map 27, is allocated for residential development that includes: (a) approximately 23 dwellings, including affordable homes, with a focus on providing a mix of housing types and sizes to reflect local need.	Unknown	Unknown	Construction phase

Scope of Cumulative Effects Assessment

3.13.6 The cumulative effects presented and assessed in this section have been based on the Project Design Envelope set out in Volume 1, Chapter 3: Project Description of the ES as well as the information available on other projects and plans. The maximum design scenario as described for the Proposed Development (see **Table 3.26**) has been assessed cumulatively with the following other projects/plans presented within **Table 3.27.**

3.13.7 The CEA has considered the Proposed Development, alongside the NGET substation to be developed at the existing Alverdiscott Substation Site. The assessed design of NGET substation has been based upon a combination of reasonable worst case parameters, as detailed within Volume 1, Chapter 3: Project Description of the ES. The development area for the NGET substation would comprise up to 3.8 ha of land. Within that area it is assumed that the substation itself will occupy a footprint of approximately 2.8 ha, with a maximum height of 15 m, excluding connecting tower structures. If further information is available for the proposal before the Proposed Development receives development consent, the Applicant will review the information and provide any update needed to the CEA.

Cumulative Effects Assessment

3.13.8 A description of the significance of cumulative effects upon hydrology and flood risk receptors arising from construction, operation and maintenance and decommissioning is given below.

Construction - Tier 1 and Tier 3 Projects

The Impact of Contaminated Runoff on the Quality of Surface Water and Ground Receptors

Sensitivity of the Receptor

3.13.9 The majority of the Main Rivers and ordinary watercourses present within the study area discharge to the Taw and Torridge Estuary transitional water body. Several small ordinary watercourses close to the coast are shown to outfall to Barnstaple Bay which flows from the Taw and Torridge Estuary also ultimately discharges to. Watercourses are presented within Figure 3.2 (see Volume 2, Figures). Groundwater within the study area falls within the Torridge and Hartland Streams groundwater water body.

3.13.10 Taking a precautionary approach in assuming surrounding water bodies have achieved/maintained 'good' status at the time when construction begins, the surface watercourses and groundwater bodies within the study area will have been assessed with a WFD status of 'good'. The watercourses and groundwater bodies are therefore considered to be highly vulnerable in relation to WFD classification status, but of moderate recoverability. The sensitivity of the receptor is therefore, considered to be **high**.

3.13.11 The study area includes Mermaid's Pool to Rowden Gut and Taw-Torridge Estuary SSSI, the latter of which the majority of watercourses within the study

area ultimately discharge to. Designated sites are nationally important and thus have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.12 NVZs covering Jennetts Reservoir and Gammaton Reservoirs also noted to have an existing risk of nitrate pollution. The designated sites are locally important and have a medium value, high vulnerability and medium recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.13 There is one active surface water abstraction and two private water supplies within the study area. Water supplies are for industrial and potable uses and thus have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptors is considered to be **high**.

Magnitude of Impact

3.13.14 Cumulative schemes are listed within **Table 3.27**. It is assumed, where relevant, in accordance with NPS, the NPPF and/or PPG, that new developments would be required to provide appropriate management techniques to treat potentially contaminated run-off prior to discharge into the surrounding surface water environment or local sewer network. The developments would also be required to implement a series of construction mitigation measures to limit potential sources of polluted runoff (including sediment-laden runoff) and mitigating pathways to prevent pollutants (should they arise) from entering the wider surface water network during construction.

3.13.15 The magnitude of the impact is predicted to be of local spatial extent and short term duration. The magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.16 Overall, the magnitude of the impact to watercourses and designated sites are deemed to be **negligible** and the sensitivity of the receptors is considered to be **high**. The effect will, therefore, be of **minor adverse** significance, which is **not significant** in EIA terms.

The Impact of Increased Flood Risk Arising From Additional Surface Water Runoff

Sensitivity of the Receptor

3.13.17 The Landfall is situated at Cornborough Range which comprises a natural and wide, substantially dry valley with a natural shingle bar which by virtue of elevation, the beach acts as an informal flood defence. The beach is classified as a geologically designated SSSI and thus is nationally important and is located within EA Flood Zones 1 and 3. As such, the Landfall has high value, high vulnerability and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.18 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus high

value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.19 The majority of the Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability, and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.13.20 Cumulative schemes are listed within **Table 3.27**. It is assumed, where relevant, in accordance with NPS, NPPF and/or PPG, that new developments would be required to implement a series of construction mitigation measures to manage surface water drainage during construction.

3.13.21 The impacts on flood risk from the temporary change in runoff are only likely to affect the SSSI and adjacent land receptor and, assuming that designed in, and construction measures are implemented, there is unlikely to be any observable degradation in flood risk. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.22 Overall, the magnitude of the impacts are deemed to be **negligible** and the sensitivity for the study area is considered to be **high**. Therefore, the effect will be of minor adverse significance, which is **not significant** in EIA terms.

The Impact of Increased Flood Risk Arising From Damage to Existing Flood Defences

Sensitivity of the Receptor

3.13.23 Cornborough Range comprises a natural and wide, substantially dry valley with a natural shingle bar which, by virtue of elevation, acts as an informal flood defence against tidal flooding. The Cornborough Range also partially forms Mermaid's Pool to Rowden Gut geologically designated SSSI which is nationally important and thus of high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.24 Flood defences are present along either bank of the River Torridge (Main River) within the study area and inland of the Landfall, offering protection against flooding. Figure 3.7 (see Volume 2, Figures) shows the location of flood defences within the study area. Flood defences have a high value, medium vulnerability, a medium recoverability and therefore are considered to have **high** sensitivity.

Magnitude of Impact

3.13.25 None of the cumulative schemes listed within **Table 3.27** are located within proximity to formal or informal flood defences and therefore, no cumulative effects regarding flood risk arising from damage to flood defences will occur. The impact magnitude is therefore considered to be of **no change.**

Significance of Effect

3.13.26 As no construction associated with the Proposed Development is to occur within proximity to formal and informal flood defences, no cumulative effects will occur. Overall, the magnitude of the impact is deemed to be of **no change** and therefore **no effect** would arise which is not significant in EIA terms.

The Impact of Increased Flood Risk Arising from Watercourse Crossings

Sensitivity of the Receptor

3.13.27 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus of high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.28 The majority of Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.13.29 Cumulative impacts on flood risk arising from watercourse crossings would only occur where development limits associated with cumulative schemes listed within **Table 3.27** coincide with the Proposed Development. Furthermore, there is a limited spatial overland between the Proposed Development and the cumulative schemes. In line with NPS, the NPPF and/or PPG, projects as a minimum, new developments would be required to implement a series of construction mitigation measures to manage flood risk during construction.

3.13.30 With the incorporation of appropriate construction mitigation techniques, the impact is predicted to be of local spatial extent with a minor shift away from existing hydrological environment of local receptors. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.31 Overall, the magnitude of impact is deemed to be negligible adverse and the sensitivity of the receptor is considered to be high. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

The Impact of Damage to Existing Field Drainage

Sensitivity of the Receptor

3.13.32 Field drains constructed for field irrigation within the Onshore Infrastructure Area are of moderate value, moderate vulnerability, and moderate recoverability due to costs associated with reinstatement. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of Impact

3.13.33 Cumulative impacts on field drainage would only occur where development limits associated with cumulative schemes listed within **Table 3.27** coincide with the Proposed Development. Furthermore, there is a limited spatial overland between the Proposed Development and the cumulative schemes. In line with NPS, the NPPF and/or PPG, projects as a minimum, require a surface water management strategy and drainage scheme to limit any increase in surface water runoff from the site, and to mimic (as close as practicable) the current hydrological regime.

3.13.34 With the incorporation of appropriate construction mitigation techniques, the impact is predicted to be of local spatial extent with a minor shift away from existing hydrological environment of local receptors. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of Effect

3.13.35 Overall, the magnitude of impact is deemed to be **negligible**, and the sensitivity of the receptor is considered to be **medium**. The effect will, therefore, be of **minor adverse** significance, which is **not significant** in EIA terms.

The Impact of Damage to Existing Water Supply and Drainage Infrastructure

Sensitivity of the Receptor

3.13.36 Pipeline infrastructure comprises water supply and wastewater drainage pipelines operated by South West Water and are considered to have a moderate value and contribute to the local and regional economy. They have high vulnerability to the construction impacts of the Onshore HVDC Cable Corridor, HVAC Cable Corridors and converter stations and low recoverability due to high costs. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of Impact

3.13.37 Cumulative impacts on field drainage would only occur where development limits associated with cumulative schemes listed within **Table 3.27** coincide with the Proposed Development. Furthermore, there is a limited spatial overland between the Proposed Development and Cumulative Schemes. In line with NPS, the NPPF and/or PPG, projects as a minimum, require a standoff from in situ utility assets to limit the risk of damage to the utility. It is assumed that all other Proposed Development will be constructed using industry best practice and therefore should limit any effect on water and sewer pipelines.

3.13.38 With the incorporation of appropriate construction mitigation techniques, the cumulative impact is predicted to be of local spatial extent with a minor shift away from existing hydrological environment of local receptors. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of Effect

3.13.39 Overall, the magnitude of the impact is deemed to be **negligible**, and the sensitivity of the setting is considered to be **high**. The effect will, therefore, be of **minor adverse** significance, which is **not significant** in EIA terms.

Tier 2 Projects

3.13.40 There are no tier 2 projects.

Operation and Maintenance - Tier 1 and Tier 3 Projects

The Impact of Increased Flood Risk Arising From Additional Surface Water Runoff

Sensitivity of the Receptor

3.13.41 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus on high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.42 The majority of Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area.

3.13.43 The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings.

3.13.44 Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power, and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability, and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.13.45 Cumulative schemes are listed within **Table 3.27**. It is assumed, where relevant, in accordance with NPS, the NPPF and/or PPG, that new developments would be required to attenuate surface water run-off, where practicable, to the greenfield run-off rate and thus reduce the risk of flooding downstream.

3.13.46 For consent to be obtained for any of the other Proposed Developments, the developer is required to demonstrate that the risk of flooding during the lifetime of the development could be mitigated to a level acceptable to the EA, Torridge District Council and Devon County Council.

3.13.47 The magnitude of impact is predicted to be of local spatial extent and long term duration. The impact magnitude is therefore predicted to be **negligible beneficial**.

Significance of the Effect

3.13.48 Overall, the magnitude of the impact is deemed to be **negligible**, and the sensitivity of the receptor is considered to be **high**. In line with national policy, surface water runoff during operation will be required to be attenuated and discharged where practicable to the greenfield runoff rate. As such, a slight reduction in flood risk downstream of the Proposed Developments will occur. The effect will, therefore, be of **minor beneficial** significance, which is **not significant** in EIA terms.

Tier 2 Projects

3.13.49 There are no tier 2 projects.

Decommissioning - Tier 1 and Tier 3 Projects

The Impact of Contaminated Runoff on the Quality of Surface Water and Ground Receptors

Sensitivity of the Receptor

3.13.50 The majority of the Main Rivers and ordinary watercourses present within the study area discharge to the Taw and Torridge Estuary transitional water body. Several small ordinary watercourses close to the coast are shown to outfall to Barnstaple Bay which flows from the Taw and Torridge Estuary also ultimately discharges to. Watercourses are presented within Figure 3.2 (see Volume 2, Figures). Groundwater within the study area falls within the Torridge and Hartland Streams groundwater water body.

3.13.51 Taking a precautionary approach in assuming surrounding water bodies have achieved/maintained 'good' status at the time when construction begins, the surface watercourses and groundwater bodies within the study area will have been assessed with a WFD status of 'good'. The watercourses and groundwater bodies are therefore considered to be highly vulnerable in relation to WFD classification status, but of moderate recoverability. The sensitivity of the receptor is therefore, considered to be **high**.

3.13.52 The study area includes Mermaid's Pool to Rowden Gut and Taw-Torridge Estuary SSSI, the latter of which the majority of watercourses within the study area ultimately discharge to. Designated sites are nationally important and thus have a high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.53 NVZs covering Jennetts Reservoir and Gammaton Reservoirs also noted to have an existing risk of nitrate pollution. The designated sites are locally important and have a medium value, high vulnerability and medium recoverability. The sensitivity of the receptor is considered to be **high**.

Magnitude of Impact

3.13.54 The impacts of decommissioning from cumulative schemes are listed within **Table 3.27**. will be reduced through the incorporation of management measures (such as those outlined within **Table 3.25** including the implementation of an onshore decommissioning plan, implementation of emergency spill response procedures including clean up and remediation of contaminated soils. These standard mitigation measures will be required as part of the permissions for each of the cumulative schemes. The magnitude of the impact is predicted to be of local spatial extent and short term duration. The magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.55 Overall, the magnitude of the impact to watercourses and designated sites are deemed to be negligible and the sensitivity of the receptors is considered to be high. The effect will, therefore, be of **minor adverse** significance, which is **not significant** in EIA terms.

The Impact of Increased Flood Risk Arising From Additional Surface Water Runoff

Sensitivity of the Receptor

3.13.56 The Landfall is situated at Cornborough Range which comprises a natural and wide, substantially dry valley with a natural shingle bar which by virtue of elevation, the beach acts as an informal flood defence. The beach is classified as a geologically designated SSSI and thus is nationally important and is located within EA Flood Zones 1 and 3. As such, the Landfall has high value, high vulnerability and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.57 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.58 The majority of Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads,

Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability, and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.13.59 Cumulative schemes are listed within **Table 3.27**. It is assumed, where relevant, in accordance with NPS, NPPF and/or PPG, that new developments would be required to implement a series of mitigation measures to manage surface water drainage during decommissioning in the form of an onshore decommissioning plan.

3.13.60 The impacts on flood risk from the temporary change in runoff are only likely to affect the SSSI and adjacent land receptor and, assuming that designed in, and construction measures are implemented, there is unlikely to be any observable degradation in flood risk. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.61 Overall, the magnitude of the impacts are deemed to be **negligible** and the sensitivity for the study area is considered to be **high**. Therefore, the effect will be of **minor adverse** significance, which is **not significant** in EIA terms.

The Impact of Increased Flood Risk Arising From Damage to Existing Flood Defences

Sensitivity of the Receptor

3.13.62 Cornborough Range comprises a natural and wide, substantially dry valley with a natural shingle bar which by virtue of elevation, acts as an informal flood defence against tidal flooding. The Cornborough Range also partially forms Mermaid's Pool to Rowden Gut geologically designated SSSI which is nationally important and thus of high value, high vulnerability and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.63 Flood defences are present along either bank of the River Torridge (Main River) within the study area and inland of the Landfall, offering protection against flooding. Figure 3.7 (see Volume 2, Figures) shows the location of flood defences within the study area. Flood defences have a high value, medium vulnerability, a medium recoverability and therefore are considered to have **high** sensitivity.

Magnitude of Impact

3.13.64 None of the Proposed Developments listed within **Table 3.27** are located within proximity to formal or informal flood defences and therefore, no cumulative effects regarding flood risk arising from damage to flood defences will occur. The impact magnitude is therefore considered to be **no change.**

Significance of the Effect

3.13.65 As no Proposed Development is to occur within proximity to formal and informal flood defences, no cumulative effects will occur. Overall, the magnitude of the impact is deemed to be no change and therefore **no effect** would arise, which is not significant in EIA terms.

The Impact of Increased Flood Risk Arising from Watercourse Crossings

Sensitivity of the Receptor

3.13.66 The majority of watercourses discharge to the River Torridge and Taw-Torridge Estuary, a biologically designated SSSI and the Landfall crosses Mermaid's Pool to Rowden Gut SSSI. The designated site is nationally important and thus high value, high vulnerability, and a low recoverability. The sensitivity of the receptor is considered to be **high**.

3.13.67 The majority of Onshore Infrastructure Area (including the converter stations) is situated within a mainly rural area, with limited residential properties within the surrounding area. The study area includes the settlement of Abbotsham close to Landfall which comprises residential and commercial buildings. Main roads, Cornborough Sewage Treatment Works, Jennets Reservoir, power and utility connections are also located within the study area. As such, land within the study area is of high vulnerability, low recoverability and high value. The sensitivity of the receptor is therefore, considered to be **high**.

Magnitude of Impact

3.13.68 Cumulative impacts on flood risk arising from watercourse crossings would only occur where development limits associated with cumulative schemes listed within **Table 3.27** coincide with the Proposed Development. The impacts of decommissioning activities within the cumulative schemes will be reduced through the incorporation of management measures (outlined in **Table 3.25**), including the implementation of a Pollution Prevention Plan and an onshore decommissioning plan. These standard embedded mitigation measures will be required as part of the permissions for each of the cumulative schemes. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.69 Overall, the magnitude of impact is deemed to be negligible adverse and the sensitivity of the receptor is considered to be high. The effect will, therefore, be of **minor adverse significance**, which is not significant in EIA terms.

The Impact of Damage to Existing Field Drainage

Sensitivity of the Receptor

3.13.70 Field drains constructed for field irrigation within the Onshore Infrastructure Area are of moderate value, moderate vulnerability and moderate recoverability due to

costs associated with reinstatement. The sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of Impact

3.13.71 Cumulative impacts on field drainage would only occur where development limits associated with cumulative schemes listed within **Table 3.27** coincide with the Proposed Development. The impacts of decommissioning activities within the cumulative schemes will be reduced through the incorporation of management measures (outlined in **Table 3.25**), including the implementation of a Pollution Prevention Plan and an onshore decommissioning plan. These standard embedded mitigation measures will be required as part of the permissions for each of the cumulative schemes. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.72 Overall, the magnitude of impact is deemed to be negligible, and the sensitivity of the receptor is considered to be medium. The effect will, therefore, be of minor adverse significance, which is **not significant** in EIA terms.

The Impact of Damage To Existing Water Supply And Drainage Infrastructure

Sensitivity of the Receptor

3.13.73 Pipeline infrastructure comprises water supply and wastewater drainage pipelines operated by South West Water and are considered to have a moderate value and contribute to the local and regional economy. They have high vulnerability to the construction impacts of the onshore cable and converter stations and low recoverability due to high costs. The sensitivity of the receptor is therefore considered to be **high**.

Magnitude of Impact

3.13.74 Cumulative impacts on water supply and drainage infrastructure would only occur where development limits associated with cumulative schemes listed within **Table 3.27** coincide with the Proposed Development. The impacts of decommissioning activities within the cumulative schemes will be reduced through the incorporation of management measures (outlined in **Table 3.25**), including the implementation of a Pollution Prevention Plan and an onshore decommissioning plan. These standard embedded mitigation measures will be required as part of the permissions for each of the cumulative schemes. The magnitude of impact is predicted to be of local spatial extent and short term duration. The impact magnitude is therefore considered to be **negligible adverse**.

Significance of the Effect

3.13.75 Overall, the magnitude of the impact is deemed to be negligible and the sensitivity of the receptor is considered to be high. The effect will, therefore, be of **minor adverse** significance, which is **not significant** in EIA terms.

Tier 2 Projects

3.13.76 There are no tier 2 projects.

3.14 Transboundary Effects

3.14.1 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to hydrology and flood risk from the Proposed Development upon the interests of other states.

3.15 Inter-related Effects

3.15.1 Inter-relationships are the impacts and associated effects of different aspects of the Proposed Development on the same receptor. These are as follows.

- Whole life effects: Assessment of the scope for effects that occur throughout more than one phase of the Proposed Development (construction, operation and maintenance, and decommissioning), to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three phases (e.g., construction noise effects from piling and operational substation noise).
- Receptor led effects: Assessment of the scope for all relevant effects (including inter-relationships between environmental topics) to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on hydrology and flood risk, such as increased rates of surface water runoff may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects may be short term, temporary or transient effects, or incorporate longer term effects.

3.15.2 It is anticipated there may be an inter-related effect between possible groundwater contamination and surface water hydrology, especially in relation to watercourse crossings via HDD or other trenchless techniques. Additional information is presented within Volume 2, Chapter 4: Geology, Hydrogeology and Ground Conditions of the ES. Secondary mitigation is proposed to ensure that contamination of groundwater does not occur. That will in turn ensure that there will be no impact on surface water quality.

3.15.3 A description of the likely interactive effects arising from the Proposed Development on hydrology and flood risk is provided in Volume 4, Chapter 5: Inter-related Effects of the ES.

3.16 Summary of Impacts, Mitigation Measures and Monitoring

3.16.1 Information on hydrology and flood risk within the study area was collected through desk review and a site-specific FRA (see Volume 2, Appendix 3.1 Flood Risk Assessment of the ES), including drainage strategies for the converter stations.

3.16.2 Information on hydrology and flood risk within the study area was collected through a desktop review and data analysis, site surveys, consultation.

3.16.3 **Table 3.28** presents a summary of the impacts, measures adopted as part of the Proposed Development and residual effects in respect to hydrology and flood risk. The impacts assessed include:

- the impact of contaminated runoff on the quality of surface water and ground receptors;
- the impact of increased flood risk arising from additional surface water runoff;
- the impact of increased flood risk arising from damage to existing flood defences;
- the impact of increased flood risk arising from watercourse crossings;
- the impact of damage to existing field drainage; and
- the impact of damage to existing water supply and drainage infrastructure.

3.16.4 Overall, it is concluded that there will be no significant effects arising from the Proposed Development during the construction, operation and maintenance or decommissioning phases.

3.16.5 **Table 3.29** presents a summary of the cumulative impacts, mitigation measures and residual effects. The cumulative impacts assessed include:

- the impact of contaminated runoff on the quality of surface water and ground receptors;
- the impact of increased flood risk arising from additional surface water runoff;
- the impact of increased flood risk arising from damage to existing flood defences;
- The impact of increased flood risk arising from watercourse crossings;
- the impact of damage to existing field drainage; and
- the impact of damage to existing water supply and drainage infrastructure.

3.16.6 Overall, it is concluded that there will be no significant cumulative effects from the Proposed Development alongside other projects/plans.

3.16.7 No transboundary impacts have been identified in regard to effects of the Proposed Development.

Table 3.28: Summary of environmental effects

Description of Impact	Phase[a]			Embedded Mitigation	Sensitivity of receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Proposed Monitoring
	C	O	D							
The impact of contaminated runoff on the quality of surface water and ground receptors	✓	×	✓	ONS68, ONS07, ONS69, ONS04, ONS08 and ONS74 (see **Table 3.25**).	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None
The impact of increased flood risk arising from additional surface water runoff	✓	✓	✓	ONS67, ONS69 and ONS75 (see **Table 3.25**).	C:High O:Medium and High D: High	C: Negligible Adverse O: Negligible Beneficial D: Negligible Adverse	C: Minor Adverse O: Negligible Beneficial D: Minor Adverse	C: None O: None D: None	C: None O: None D: None	C: None O: None D: None
The impact of increased flood risk arising from damage to existing flood defences	✓	×	✓	ONS67 and ONS04 (see **Table 3.25**).	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None
The impact of increased flood risk arising from watercourse crossings	✓	×	✓	ONS67, ONS21, ONS75, ONS76 and ONS78 (see **Table 3.25**).	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None
The impact of damage to existing field drainage	✓	×	✓	ONS79 (see **Table 3.25**).	C: Medium D:Medium	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None

Description of Impact	Phase[a]			Embedded Mitigation	Sensitivity of receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Proposed Monitoring
	C	O	D							
The impact of damage to existing water supply and drainage infrastructure	✓	×	✓	ONS21 and ONS04 (see **Table 3.25**).	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None

Table 3.29: Summary of cumulative environmental effects

Description of Impact	Phase[a]			Embedded Mitigation	Sensitivity of receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Proposed Monitoring
	C	O	D							
The impact of contaminated runoff on the quality of surface water and ground receptors	✓	×	✓	ONS68, ONS07, ONS69, ONS04, ONS08 and ONS74 (see **Table 3.25**).	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None
The impact of increased flood risk arising from additional surface water runoff	✓	✓	✓	ONS67, ONS69 and ONS75 (see **Table 3.25**).	C:High O:High D: High	C: Negligible Adverse O: Negligible Beneficial D: Negligible Adverse	C: Minor Adverse O: Minor Beneficial D: Minor Adverse	C: None O: None D: None	C: None O: None D: None	C: None O: None D: None
The impact of increased flood risk arising from damage to existing flood defences	✓	×	✓	ONS67 and ONS04 (see **Table 3.25**).	C: High D:High	C: No Change D: No Change	C: Minor Adverse D: No Effect	C: None D: None	C: None D: None	C: None D: None
The impact of increased flood risk arising from watercourse crossings	✓	×	✓	ONS67, ONS21, ONS75, ONS76 and ONS78	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None

Description of Impact	Phase[a]			Embedded Mitigation	Sensitivity of receptor	Magnitude of impact	Significance of Effect	Further Mitigation	Residual Effect	Proposed Monitoring
	C	O	D							
				(see **Table 3.25**).						
The impact of damage to existing field drainage	✓	×	✓	ONS79 (see **Table 3.25**).	C: Medium D:Medium	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None
The impact of damage to existing water supply and drainage infrastructure	✓	×	✓	ONS21 and ONS04 (see **Table 3.25**).	C: High D:High	C: Negligible Adverse D: Negligible Adverse	C: Minor Adverse D: Minor Adverse	C: None D: None	C: None D: None	C: None D: None

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